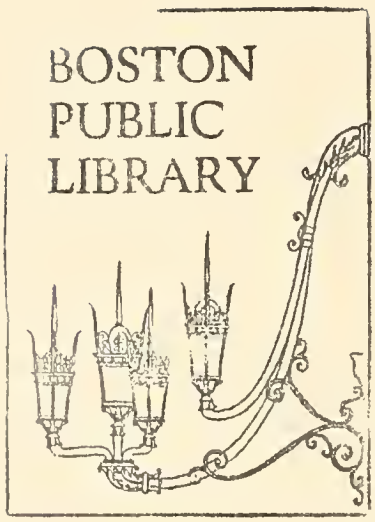
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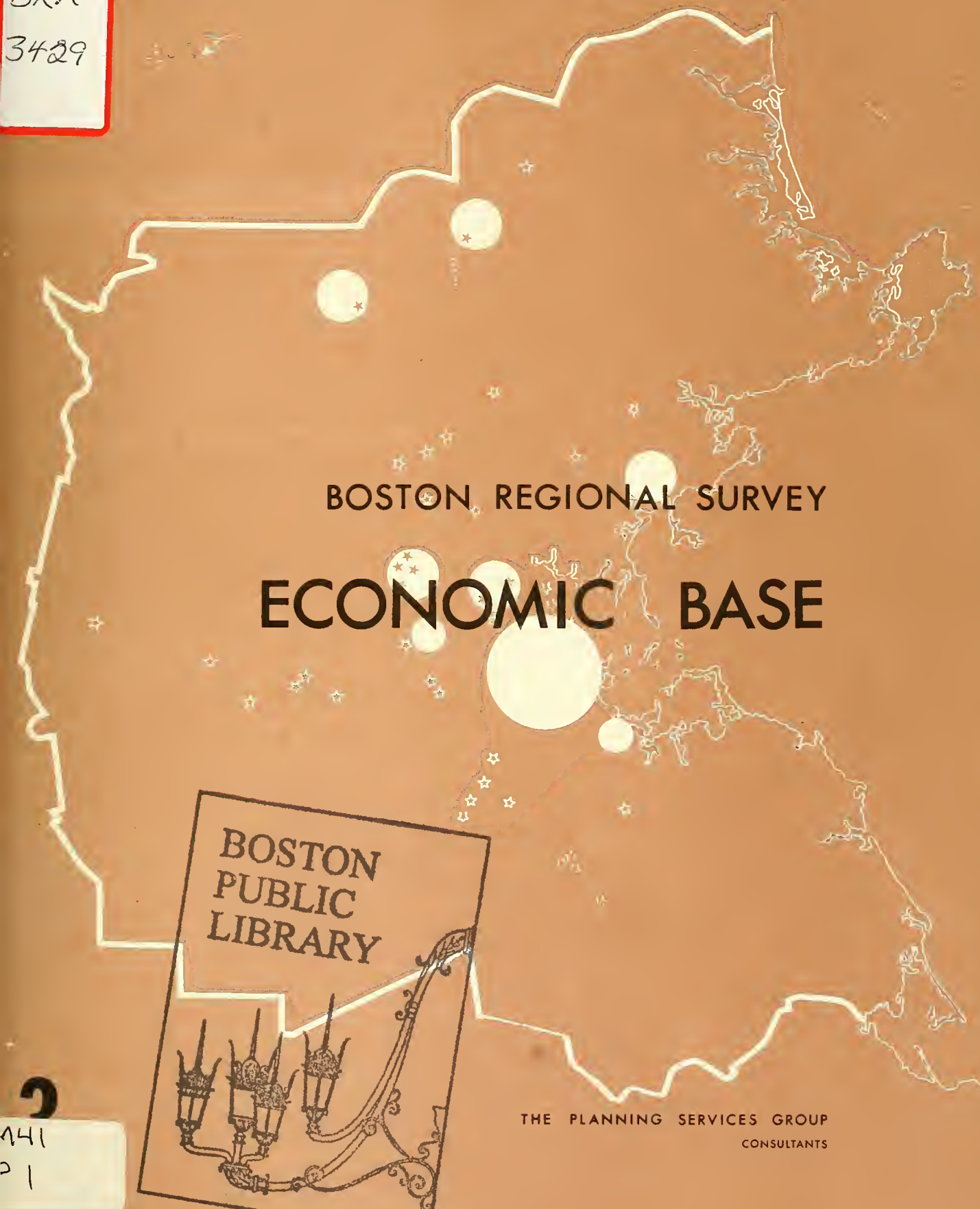
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BOSTON REGIONAL SURVEY

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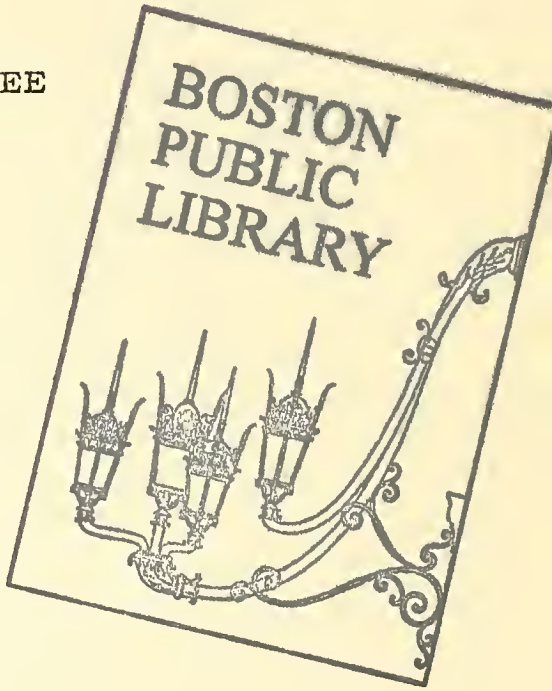
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THE BOSTON REGIONAL SURVEY

OVERVIEW: CHAPTER THREE

ECONOMIC BASE

JULY, 1962



Prepared for the
MASS TRANSPORTATION COMMISSION
COMMONWEALTH OF MASSACHUSETTS
120 Tremont Street
Boston, Massachusetts
by

THE PLANNING SERVICES GROUP
Cambridge, Massachusetts

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THE BOSTON REGIONAL SURVEY

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II. REGIONAL OVERVIEW

CHAPTER ONE: POPULATION (June, 1962)

CHAPTER TWO: LAND USE (June, 1962)

CHAPTER THREE: ECONOMIC BASE (July, 1962)

CHAPTER FOUR: DECISION FACTORS

III. TRANSPORTATION INVENTORY

CHAPTER FIVE: PUBLIC TRANSPORTATION

CHAPTER SIX: RAILROADS

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THE BOSTON REGIONAL SURVEY

INTRODUCTION

In July, 1961, the Mass Transportation Commission initiated a basic planning study of the Boston Metropolitan Region. The objectives of this project, the Boston Regional Survey, are (1) the preparation of a comprehensive inventory of planning studies of the region, and (2) analysis of regional research and proposals with respect to transportation, population, land use patterns, economic development, and other factors.

The Boston Regional Survey is designed as an introduction to the major regional planning and transportation activities in the Boston region now being organized by the Mass Transportation Commission. These major efforts, in contrast to the present survey, which is largely limited to a review of past efforts, will involve the gathering of considerable amounts of new data on travel patterns and related phenomena as well as preparation of comprehensive plans for regional land use and transportation.

Organization of the Survey

The Boston Regional Survey, and the publications resulting from it, have been organized into four main phases:

1. Assembly and summarization of information on all major plans and research studies of the Boston region. This phase culminated in publication of an annotated bibliography in May, 1962.

 An overview survey of the foundation elements of regional development. The four chapters in the overview phase include the three inventory topics which are usually considered basic in planning: population, land use, and economic base. One additional element of significance to regional development patterns is also included, an analysis of private and community decision factors in choice of transportation alternatives. This includes an

analysis of political, social and economic factors and an evaluation of regional amenities and aesthetics as these relate to transportation modes.

3. An inventory of the principal regional transportation systems, to provide an understanding of the ways in which these systems have developed and the prospects for change in each. The four chapters in this phase will cover public transportation, the railroad system, ports and airports, and the highway system.

4. The final report of the Survey will integrate materials from the three preceding phases into an analysis of regional development prospects, designed to serve as the basis for subsequent planning efforts by the Mass Transportation Commission

The present volume is the economic base portion of the regional overview. A listing of all published and planned volumes in the Survey can be found in the front of this report.

The Study Area

The area selected for study in the Boston Regional Survey has been termed the Boston Metropolitan Region. In general this is the area referred to in this report as the "region" or the "Boston region." The location of the study area is shown on Figure 1 in relation to other major urban areas of the northeastern Atlantic seaboard. In Figure 2 the 144 cities and towns that are included in the region are shown, together with the boundaries of the Standard Metropolitan Statistical Areas that are included in the region.

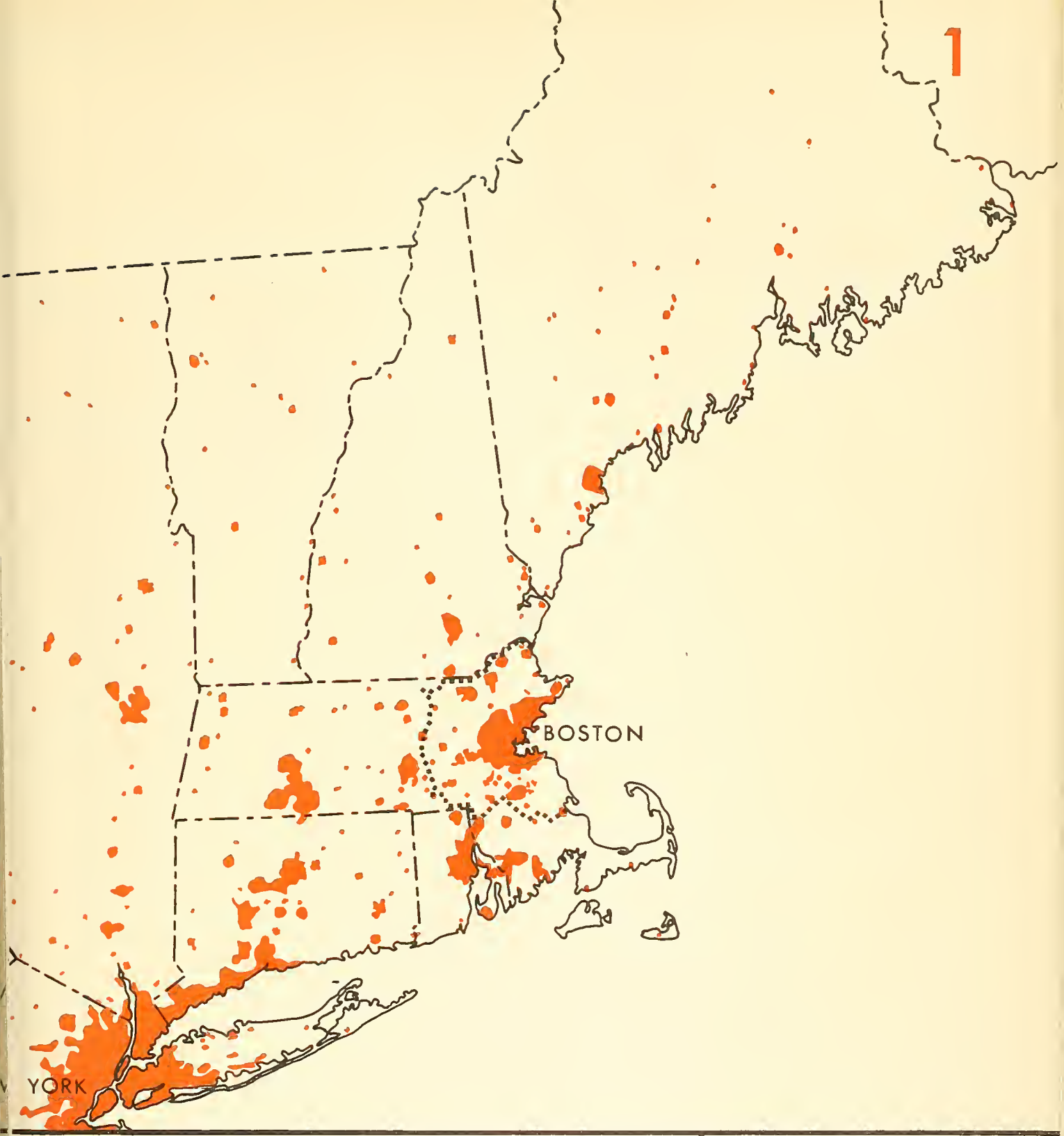
The study area is bounded on the north by the New Hampshire border. On the west it follows roughly a line one tier of communities outside Interstate Route 495, the so-called Outer Belt. In the south, the region borders on the State of Rhode Island and the Southeastern Massachusetts Planning Region (Bristol County). On the east the waters of

Massachusetts Bay define the region. The Boston Metropolitan Region is generally similar to the Greater Boston study area that has been utilized by the Greater Boston Economic Study Committee, a non-profit, private agency which has conducted a number of regional research studies.

Scope of this Report

This report attempts to place in perspective the economy of the Boston Metropolitan Region and to relate economic trends in the region to population, land use, and transportation factors. It opens with a brief review of the historic basis of development of the regional economy, followed by an examination of recent patterns and trends in the regional economy in relation to the United States. Subsequent sections examine the major sectors of the regional economy: manufacturing industry and the complex of trades and services that comprise the non-manufacturing sectors. These are followed by a presentation of projections of future economic levels in the region as a whole and major sub-areas. The final section is devoted to an examination of state-local taxation as a factor in regional growth and development.

It is important to recognize that this report is intended as a prelude to a full-scale economic base study of the Boston region. As such, it is limited to a general review of regional economic trends and patterns. In the full-scale program of research planned by the Mass Transportation Commission, a comprehensive regional economic base study will occupy an important role.



NORTHEASTERN URBAN AREAS, 1960

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625 SQ. MILES

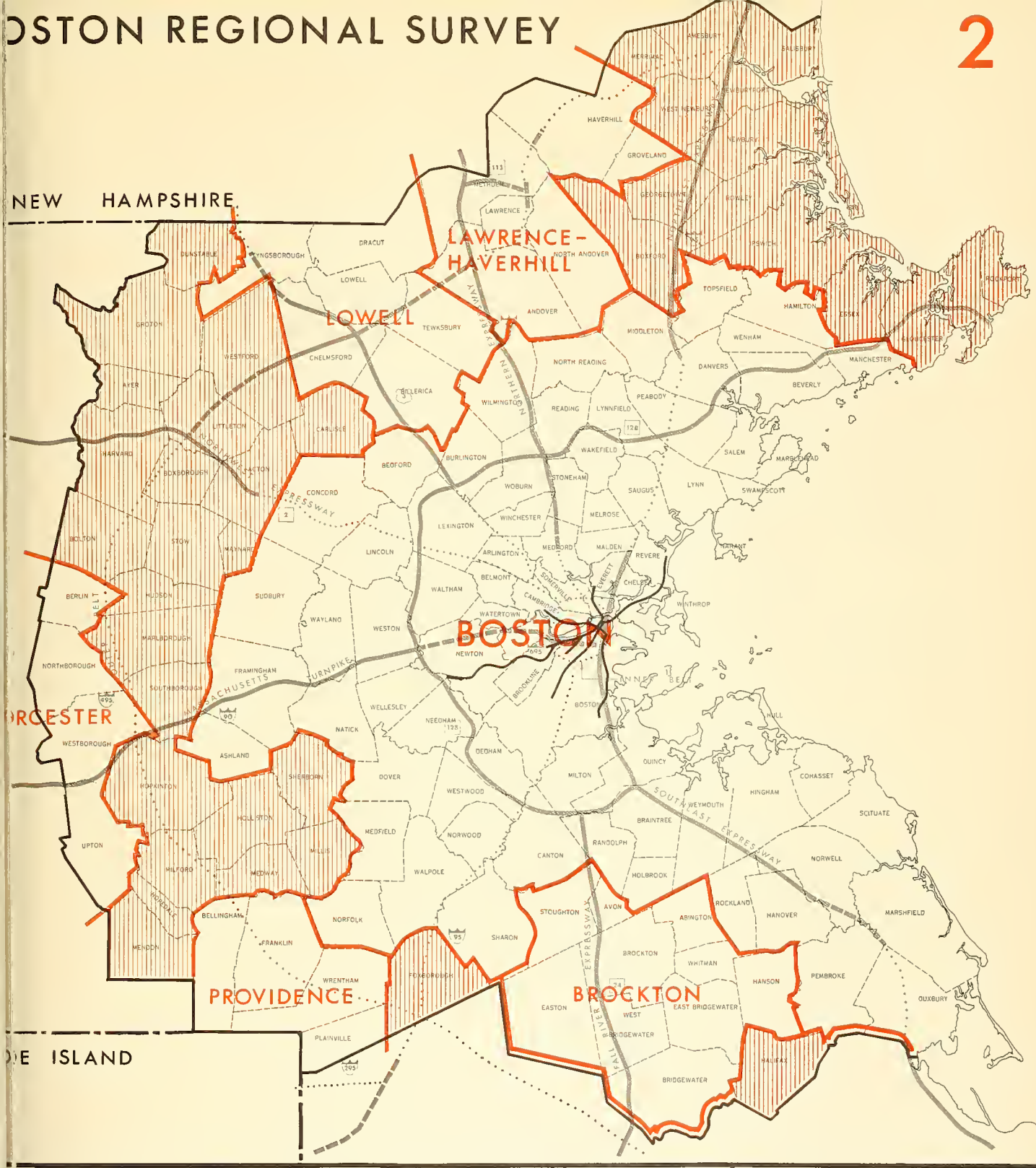
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OSTON REGIONAL SURVEY

2



TANDARD METROPOLITAN TATISTICAL AREAS, 1960

AREAS NOT INCLUDED IN SMSA

URCE: US CENSUS

GENERAL INFORMATION

- EXPRESSWAYS
 - UNDER CONSTRUCTION
 - PROPOSED
- MAJOR HIGHWAYS
- SECONDARY HIGHWAYS
- MAJOR RAILROADS
- SECONDARY RAILROADS
- RAPID TRANSIT LINES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

NORTH

2560 ACRES = 1 SQUARE MILES

0 5 10 MILES

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1. HISTORICAL DEVELOPMENT

For almost three centuries the Boston region's economy has alternated between decades of survival and those of considerable growth. In the process, the region has overcome serious locational handicaps, scanty natural resources and continued outmigration of many of its vital, energetic residents. There were few basic natural resources in the region for economic expansion, other than an excellent port, and a moderate amount of water power on the fringes of the region. Boston's geographic location, including its overland isolation from the Midwest and Canada, was and still is a serious handicap. To compensate for these disadvantages, business and financial leadership within the community has fairly consistently demonstrated an ability to adapt successfully to changing conditions.

In the course of its long history the Boston region has weathered severe stresses, financial panics, recessions, and dark years of depression. Its present economy represents a distinct break with relatively stagnant patterns of the past century, when the economy was largely based on low wage industries. The region now has a diversified economic base underwritten by great financial strength and stimulated by a preeminence in the research and development sectors of growth industries. As the economy has increasingly shifted to a reliance on intellectual capital, some of the region's traditional assets have become less significant. For example, reserves of low wage labor are helpful in attracting certain types of industry, but the region contains no enormous unskilled labor pool of the type which was one of its strengths in the 19th century and now exists in New York, Chicago or the Southern states. Instead, the economy of the Boston region runs on a cerebral fuel, on the products of its major universities and on the skills and intelligence of a corps of financial, professional and technical personnel ranking with the best in the nation.

Paradoxically, despite the risks involved in its present heavy dependence on federal military and research expenditures, the region is probably on firmer ground that it has been in many years. With one of the nation's largest concentrations of scientifically oriented growth industries operating on the advanced frontier of the economy and a strong financial and insurance function, the economy of the region promises further expansion. This is particularly the case since the economy now generates its own growth opportunities. Boston's traditional economic assets, its port, its access to water power, and its pool of low wage labor, faced strong competition from better situated areas. In contrast, the area's competitive abilities in sciences and finance are not endangered by its geographic location or its lack of natural resources. In fact the rapid technical obsolescence created by new discoveries is probably one of the most important factors in safeguarding the region from a drastic upheaval in employment patterns of the kind which struck its textile and shoe industries. There is also a fair degree of assurance that large numbers of jobs for skilled workers as well as for scientists and engineers will emerge from the region's laboratories. The region's research and development and its custom-production electronic industries are not as susceptible to automation as are stable industries in which long production runs are feasible.

This is not to say that serious problems need not be faced. Unemployment in some parts of the region is far too high, average factory wages are somewhat below the national average, further trouble can be foreseen in the remaining portions of the region's textile and shoe industries, and competition for science-based installations is becoming increasingly keen. Nevertheless, most of the transition from declining industries to growth industries has been completed and the future seems to be highly promising.

The Growth of Commerce

The port of Boston was the fulcrum of the regional economy for over a century. From the early part of the 18th century until the late 19th century Boston was one of the nation's three leading commercial centers, vying with New York and Philadelphia which have significant raw materials at their doorstep. Boston specialized in buying, selling, and occasionally processing goods produced in other areas. Prior to the Revolutionary War the area was closely involved in trade between England the the West Indies. Its activities included production of barrel staves and naval supplies, shipbuilding and the triangular trade: Boston converted West Indian sugar into rum to exchange for slaves at West African depots for sale in the West Indies. Fish, timber, and ice to chill rum, were among its raw material exports. Various maritime pursuits, including large scale smuggling past the British customs, rounded out the area's economy in the pre-Revolutionary era.

The successful conclusion of the War for Independence at first proved a disaster for the Boston economy, mainly as a result of Boston's exclusion from the British trading system. Britain effectively reduced trade between the United States and the West Indies, limited imports of naval stores, and eliminated the slave traffic to the West Indies. During the protracted conflict between the British and French empires (1793-1815), trading between Boston and Europe was sharply reduced by blockade, privateers, impressment, embargos, and other restrictions. However, Boston merchants not only survived by prospered by opening up new fields of endeavor. These included speculative but highly lucrative privateering ventures, commerce with Russia and China, and the Columbia River fur trade. Of more long range importance, a byproduct of the disruption of European commerce was establishment of infant manufacturing industries with the proceeds

derived from sale of blockaded vessels. Following the Treaty of Ghent in 1815 which brought the second war with England to a close, increasing British competition triggered the opening salvo in the New England textile industry's century and a half struggle for tariff protection from lower priced foreign imports.

The Decline of Commerce and Growth of Industry

While regional manufacturing during the early years of the nineteenth century was growing, the area's physical isolation from the rest of the United States became an increasingly burdensome handicap in competing for foreign commerce. Between 1825 and 1850 New York began to pull ahead of Boston. The completion of the Erie Canal and other waterways enabled New York to tap the rich, growing Midwestern market far more effectively than Boston. Later, the advent of the railroads intensified New York's lead over Boston; not until after the Civil War was there a direct rail connection between Boston and Chicago and by that time Boston had been permanently reduced to a secondary status with respect to New York. Throughout this period the familiar back haul problem-- the lack of outgoing cargo-- bedeviled the area's economy.

Boston's success with commercial activities over the years has provided one essential ingredient for economic growth: capital. With fortunes accumulated in commerce, particularly in the China trade, Boston capitalists financed manufactures within the region and elsewhere in New England. Boston capital was also a key factor in railroad development throughout the nation. In turn, profits from these ventures further enlarged the pool of investment capital. Between 1830 and 1860 Boston was second only to New York as a financial center. Although it subsequently declined in importance it has remained among the leaders, now ranking well behind New York, Los Angeles and Chicago.

New manufacturing industries were primarily established on the fringes of the Boston region in such places as Lynn and Salem (shoes and leather) and in Lowell (cotton textiles) and Lawrence (wool textiles) where ample process water and water power of the Merrimack River was available. In the case of Fall River and New Bedford, where Boston capital also found a promising field, tidewater access to cotton shipments was the decisive factor, and the large mills were able to develop and monopolize a productive and generally docile labor market.

Until about 1850 Boston itself, and in fact most of the present Core area, contained relatively few industries other than handicrafts. Population growth was slow and outmigration rates were high. Inmigration was largely confined to newcomers drawn from the depressed agricultural areas of New England.

After 1845 a huge influx of immigration from famine-stricken Ireland changed the situation radically. The ready-made apparel industry in which Boston wages averaged only half of those paid in New York City was only one type of manufacturing to exploit the vast pool of low cost labor. Sugar and oil refining, primary and fabricated metals, production of musical instruments, machinery, shipbuilding and brewing, glass, and shoe and leather manufactures, also forged ahead, their growth stimulated by labor costs so low as to more than compensate for locational handicaps. The middle of the nineteenth century was an era of spectacular growth for Boston. Throughout the 1850's and the Civil War the presence of a labor surplus in Boston stimulated large numbers of infant industries which rapidly outgrew their swaddling clothes. Within little more than two decades (1845-1865) Boston became the nation's fourth manufacturing city.[1] The number of industrial employees

1. Handlin, Oscar, Boston's Immigrants, (The Belknap Press of Harvard University, Cambridge, Massachusetts, 1959).

in the city doubled between 1845 and 1855, and doubled again between 1855 and 1865.

The succeeding three or four decades were in many ways a repetition of the 1850's and 1860's. Only the sources of immigration changed. French Canadians penetrated the Merrimack Valley textile mills in large numbers, Italians entered the building trades and the shoe industry, and Jews from eastern Europe drifted into apparel and retail trade.

Decline of Soft Goods Domination and Growth of a Diversified Economy

In the early 1900's Boston entered another phase of its development when growth in softgoods industries, particularly leather goods and textiles, began to decelerate. The actual decline in textiles did not set in until the early 1920's but by 1910 it was clear to many observers that the region's textile industry and the industries related to textile production were due for trouble.[1] Although some observers continued to assert that the regional future of textile industry was still bright,[2] the balance had shifted decisively southward by the mid-1920's. However, the region remained heavily dependent on the textile industry until the end of World War II. Through the early 1940's the Region relied on its decaying soft goods base, an industrial pattern more characteristic of the early stages of manufacturing development than of a dynamic, modern economy. Aside from their secular downward trend, the region's soft goods industries exhibited another unfortunate trait. They were extremely susceptible to job reductions as a result of automation and vulnerable to low-wage competition. The region was to become painfully

1. Alderfer, E.B. and Michl, H.E., The Economics of American Industry, (McGraw Hill, New York, 1957).

2. French, George, editor, New England What it is and What It Should Be, (Boston Chamber of Commerce, 1911).

aware of these weaknesses in its industrial structure in the second quarter of the 20th century.

Although Boston's financial and insurance operations remained competitive and dynamic, the region's industrial pattern did not change basically between 1850 and 1947. Textiles and textile machinery was still the region's leading industry in 1947 and leather production was still a major part of the postwar industrial scene.

During the Second World War the region's stagnant industrial base began to change, and the changes accelerated shortly after the war's end. Technological advances, closely associated with research at the area's major universities, resulted in a significant increase in electronics and instruments manufacturing. Growth in these industries gathered momentum through the years of cold war, the Korean War, and space exploration. In the twelve year period 1947-1959 progress in military technology and the impact of mammoth defense expenditures helped to create a powerful and rapid expansion in the region's electrical machinery and allied industries sufficient to compensate for a simultaneous major attrition in soft goods employment.

By the early 1960's the weakened soft goods industries, textiles and leather, had diminished to the point where further job losses were a relatively minor factor in the employment picture. The textile and leather categories comprised only 15% of the region's total manufacturing jobs in 1959 as compared to 29% in 1947.

Together with the restructuring of the industrial economy in the period following the Second World War, the Boston region fully shared a strong nationwide pattern of rapid gains in many non-manufacturing sectors of the economy. In the 1950-1960 decade government, retail and wholesale trade, and business and personal services all grew substantially.

The following sections of this report examine in broad outline the most important aspects of recent changes in the regional economy as a guide to the trends that can be anticipated in coming decades.

Although the Boston region has long shared with New England the reputation of conservatism and slow growth, in the past decade a change has occurred in Boston's image. This is partly a consequence of the bright industrial glow along Route 128 but also because Boston weathered the nation's four post war business recessions (1948-49, 1953-54, 1957-58, and 1960-62) in excellent style. Unfortunately, the same cannot be said of the three other metropolitan areas in the region; all are soft goods manufacturing centers which have been battered by cyclical downswings and subjected to long term erosion of their economic base.

This section, which is concerned with the economy of the entire Boston regions, includes an analysis of the present economic pattern and the trends that will probably shape its economic future. Because of the basic role of employment in the economy much of the analysis is concerned with employment structure and trends.

The Region in Perspective

It is useful to view regional economic patterns in the broader perspective of the nation's economy. In 1960, the national labor force consisted of 73 million persons. Of this total 2.5 million were in the armed forces, almost four million were unemployed, and five million were farm workers. The remaining 60 million workers employed in non-agricultural industries include virtually all of the persons at work in large urban areas. However, information for over five million of the sixty million is not available since accurate, comparable data are not maintained for self-employed persons, for unpaid family workers, and for domestic workers in private households. Excluding these three groups covered non-agricultural employment in the nation in 1960 was 54.3 million as reported by The U.S. Bureau of Labor

Statistics. In the Boston region covered, non-agricultural employment in 1960 was 1.3 million or 2.3% of the national total.

Manufacturing industry is the largest segment of total non-agricultural employment in the nation, providing almost a third of all jobs. Wholesale and retail trade combined rank second nationally with about a fifth of the total and the government and service categories each provide a seventh. Finance[1], construction, transportation[1], and mining are relatively less important factors in non-agricultural employment. This national pattern generally holds true for the Boston region as well as for most other major urban areas, but Boston relies to a relatively greater degree than the nation as a whole on employment in finance and service occupations. (see Table 1.)

Figure 3 depicts the pattern of employment change in the Boston Metropolitan Region by major categories over the 1950-1960 decade. Another important facet of the regional economy is shown in Figure 4, which shows the relative importance of each of the major regional employment categories in 1960.

Manufacturing Employment in the United States and the Boston Region

Total employment in the nation's manufacturing industries increased by almost 70% between 1940 and 1950, but the rate of increase slowed to only 12% in the 1950-1960 decade. Because of great strides in automation and work rationalization in recent years, manufacturing employment has not regained its 1953 high point despite continuing rises in output. Between 1950 and 1960 six industries (see Table 2.) experienced declines, with major decreases (over 20 %) occurring in textiles and

1. The categories of finance, insurance and real estate and transportation, communications and public utilities will be referred to in this report as "finance" and "transportation" for brevity.

TABLE 1
PER CENT OF NON AGRICULTURAL EMPLOYMENT BY MAJOR CATEGORIES IN THE BOSTON METROPOLITAN REGION AND OTHER SELECTED AREAS, 1950 AND 1960.

	PER CENT OF TOTAL EMPLOYMENT															
	Construction		Manufacturing		Transportation		Trade		Finance		Service		Government		Total No. in 000's[1]	
	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960
Boston Region Areas[2]																
Boston	4.7%	4.4%	30.8%	28.0%	8.3%	6.3%	25.1%	22.4%	6.7%	6.9%	12.3%	18.8%	12.2%	13.2%	883.8	1077.9
Brockton	4.0	4.5	50.3	39.0	9.0	8.3	21.1	23.2	.2	2.8	7.8	11.6	7.6	10.6	42.2	39.7
Lawrence-Haverhill	3.0	2.6	63.9	58.6	3.2	2.4	15.1	14.7	1.7	3.6	7.2	11.0	5.9	7.1	70.9	74.3
Lowell	2.8	4.3	57.8	47.8	4.5	3.5	18.0	19.4	2.2	2.8	6.4	10.4	8.3	11.6	42.2	42.2
Total Boston Region[3]	4.4	4.3	36.0	31.7	7.7	5.9	23.6	21.7	5.8	6.3	11.3	17.5	11.2	12.6	1087.8	1285.4
Other Selected Areas																
Hartford	4.8	4.8	36.1	36.7	4.0	3.9	20.6	19.3	13.9	13.1	11.4	11.9	9.2	10.3	172.3	235.9
Providence	4.3	4.0	52.5	45.3	5.0	4.8	17.1	18.0	3.6	4.3	8.3	12.3	9.2	11.3	291.2	293.4
Springfield-Holyoke	3.8	3.3	45.3	42.0	5.7	4.9	19.1	18.9	5.6	4.8	9.6	14.8	10.9	11.3	164.0	171.9
Detroit	4.4	3.9	51.9	42.9	5.8	6.1	18.0	19.7	3.1	4.2	9.1	12.3	7.7	10.9	1384.4	1194.1
New York City	3.5	3.5	28.2	26.8	9.3	9.0	23.6	21.0	9.3	10.8	15.2	17.4	10.9	11.5	3528.2	3557.1
Philadelphia	5.2	4.7	42.1	36.8	8.4	7.3	20.5	20.0	4.8	5.4	13.2	13.9	5.8	11.9	1295.5	1500.8
Pittsburgh	8.4	6.5	41.8	37.5	9.3	7.8	19.2	19.9	3.3	4.2	10.0	14.8	8.0	9.3	882.6	776.6
Total United States[4]	7.2	6.6	33.4	30.9	8.9	7.4	21.6	21.0	4.1	4.9	11.3	13.5	13.5	15.7	44,733.0	54,347.0

Notes for Table 1 on the following page.

Notes:
1. Mining is included in the total and has been distributed in either the construction or service category.
2. Metropolitan areas, approximately equal to SMSA's.
3. The total region includes the four metropolitan areas and the outlying territory.
4. For the total United States, Alaska and Hawaii are included beginning in 1959. This represents an increase of 212,000 or about 4% of the total.

Source: U. S. Department of Labor, Employment and Earnings, 1955 and 1961. Figures for the Brockton, Lawrence-Haverhill and Lowell areas are from the Massachusetts Division of Employment Security and have been adjusted for full coverage. Employment in Government in these areas has been estimated from census population figures, and assumes that most government workers live in the area in which they are employed. 1950 figures are for Springfield-Holyoke, 1951, for Detroit, 1953, and for Pittsburgh, 1952.

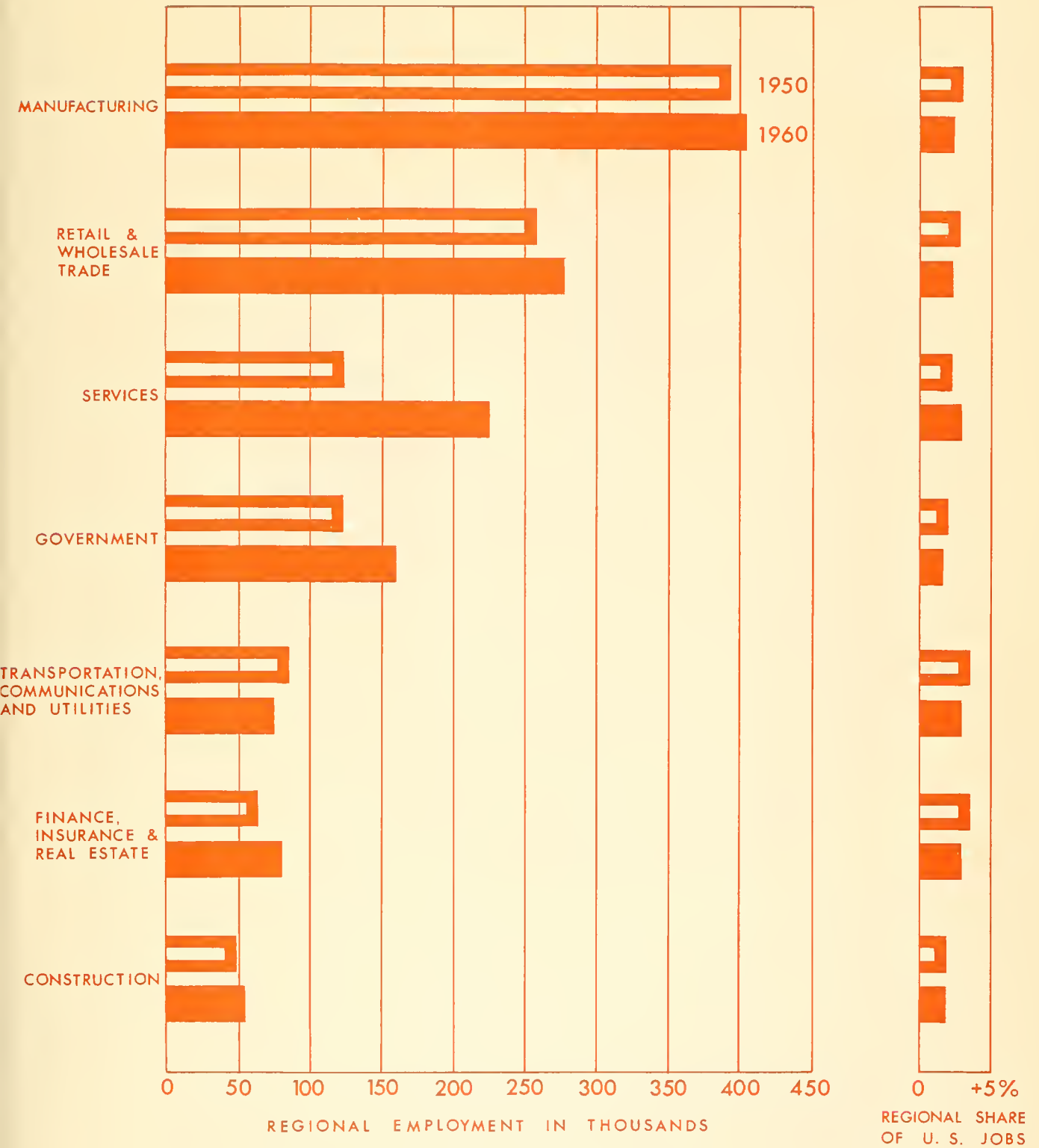
TABLE 2

UNITED STATES MANUFACTURING EMPLOYMENT TRENDS, 1950-1960 and REGIONAL SHARES, 1947 and 1959.

	Total United States Number Employed (000's)		Per Cent Change	Greater Boston as a Percentage of Employment in the U.S.	
	1950	1960	1950-1960	1947	1959
Growth Industries					
Ordance	30	187	+523.1%	-- %	6.5%
Electrical Machinery	877	1446	+ 64.9	4.9	5.9
Rubber	246	374	+ 52.0	6.8	8.7
Instruments	248	354	+ 42.7	5.9	5.1
Transportation Equipment	1264	1617	+ 27.9	0.4	1.3
Printing	738	917	+ 24.3	3.4	2.9
Pulp, Paper	485	593	+ 22.3	2.9	2.8
Chemicals	682	830	+ 21.7	2.1	1.3
Food and Kindred	1523	1793	+ 17.7	2.5	2.5
Fabricated Metals	973	1129	+ 16.0	2.1	1.9
Stone, Clay and Glass	513	595	+ 16.0	0.8	0.8
Moderate Growth Industries					
Machinery (non-electrical)	1354	1471	+ 8.6	1.8	1.9
Apparel	1184	1228	+ 3.7	2.9	2.6
Furniture	369	383	+ 3.7	1.6	1.4
Primary Metals	1200	1229	+ 2.4	0.7	0.7
Moderate Declining Industries					
Leather	392	366	- 6.6	13.7	11.1
Tobacco	103	94	- 8.7	0.3	.2
Declining Industries					
Petroleum	238	212	-10.9	1.2	0.6
Miscellaneous	453	392	-13.5	2.6	1.9
Lumber	805	637	-20.9	0.7	0.4
Textiles	1298	915	-29.5	4.8	2.2
Total Manufacturing	14,975	16,762	+11.9	2.5	2.5

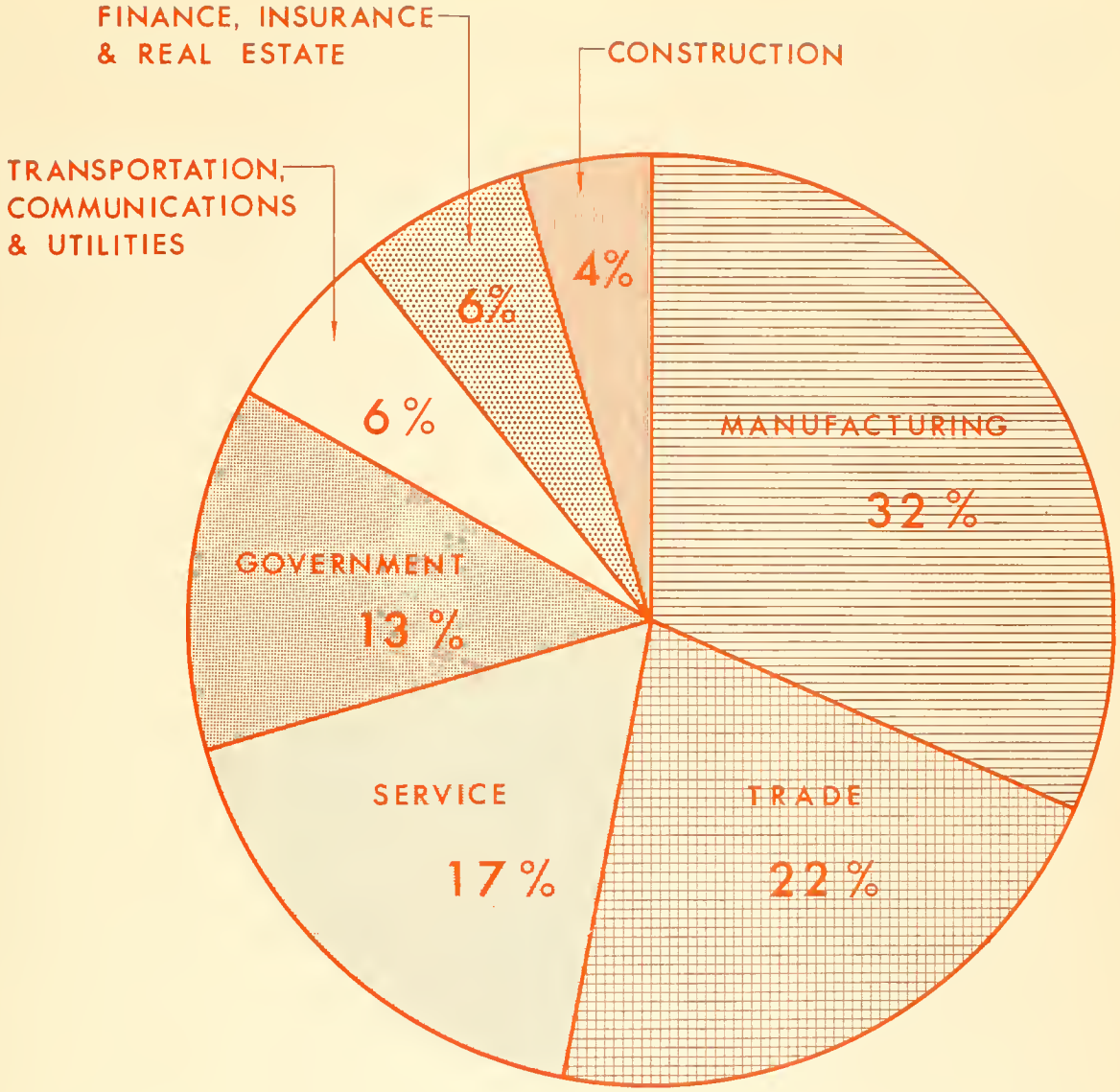
Notes to Table 2 on the following page.

Source: United States Department of Labor, Employment and Earnings and Greater Boston Economic Study Committee, Industrial Land Needs Through 1980, Land Use Report No. 2, prepared by The Planning Services Group, (May, 1962).



EMPLOYMENT BY MAJOR CATEGORIES BOSTON METROPOLITAN REGION 1950 - 1960

SOURCE: U. S. DEPT. OF LABOR, EMPLOYMENT AND EARNINGS AND TPSG



EMPLOYMENT STRUCTURE, BOSTON METROPOLITAN REGION, 1960

SOURCE: EMPLOYMENT & EARNINGS

lumber products. Textiles is the major loss industry in the Boston region. Large employment gains (more than 20%) were registered in eight of the nation's industries. Five of these experienced major (over 30%) expansion in the region; transportation equipment, electrical machinery, rubber, instruments, and pulp and paper. In addition, the region experienced a substantial gain in employment in its small stone, clay and glass industry.

The Boston metropolitan region is a major beneficiary of military expenditures and largely because of its strength in research and development, Massachusetts was one of the few states in the northeastern quadrant of the nation to increase its proportionate share of research and development prime contracts from the armed forces in the 1953-1961 period. A report by the Department of Defense indicated that Massachusetts received almost 5.8% of Pentagon research and development contracts for the fiscal year of 1961, a substantial increase over 1953, the last year of the Korean war. During the same period Massachusetts' share of prime contracts for all defense work increased from 2.8% to 4.8% of the nation's total. This represents on the order of a billion dollars since defense contracts totaled $22.1 billion [1]. Sub-contracts from prime contractors located in other states undoubtedly added to this figure. On the basis of the Boston region's proportion of Massachusetts' electronics employment and other activities related to military expenditures, it appears likely that as much as four fifths of the total was allocated to the region.

Most national manufacturing industries altered their employment structure to a significant degree during the 1950-1960 decade. One basic change was a decline, or at best a leveling off, in production workers,

1. The Boston Globe, (June 24, 1962).

a trend which was accompanied by a steep rise in the number and proportion of white collar factory personnel, including administrative, clerical and research workers. Overall, total production worker employment in the nation's manufacturing remained unchanged between 1950 and 1960 while white collar employment in industry increased by about a third. In numerical terms, production jobs remained at about 12 million while non-production factory jobs rose from approximately three million in 1950 to over four million in 1960. The shift to white collar industrial employment is particularly significant to the Boston region which contains major strengths in the numerically small research and white collar administrative categories.

Non-Manufacturing Employment

Employment growth in major non-manufacturing sectors of the national economy was substantially greater than the increase in manufacturing employment over the 1950-1960 decade. The 20% expansion of trade employment in the nation in the decade 1950-1960 was in line with population growth. This relationship also held true in the Boston region where population and trade employment both increased by about nine per cent.

In comparison with other urban centers, the Boston metropolitan area is outstanding in two respects:

(1). its relatively high proportion of 1960 jobs in business and personal service, finance, and trade, and

(2). the relatively minor reliance on manufacturing.

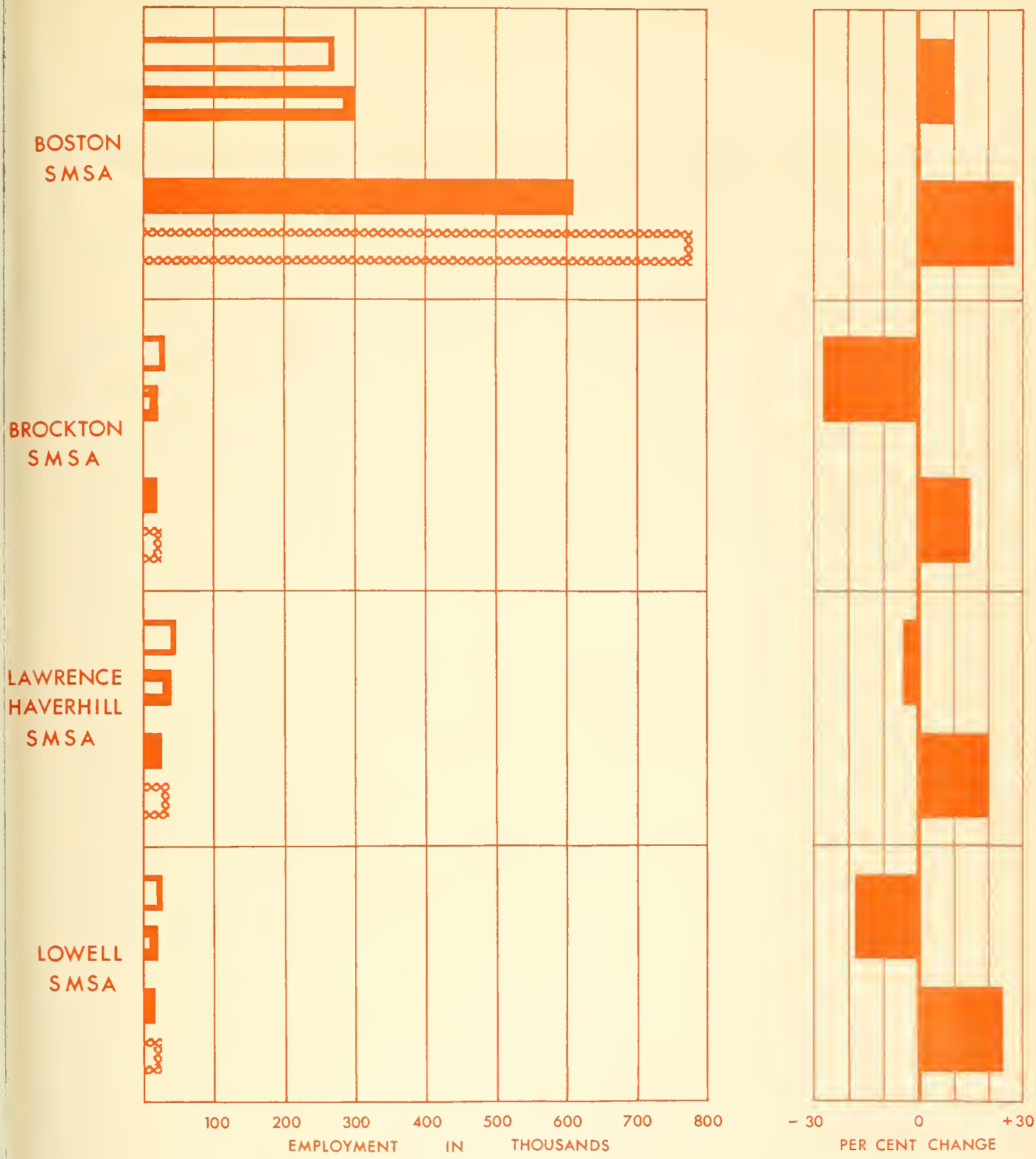
Intra-Regional Patterns

The Boston SMSA has far and away the major concentration of non-manufacturing jobs in the region. In contrast to the Boston SMSA

other regional metropolitan centers are relatively underdeveloped in non-manufacturing industries. While less than 30% of the Boston SMSA's labor force worked in manufacturing in 1960, the Merrimack Valley areas and Brockton were as heavily dependent on industrial employment as such major industrial centers as Detroit or Pittsburgh. (see Table 1.) The Lawrence-Haverhill SMSA relies more on manufacturing jobs than the other regional areas; 59% of its labor force is in this category. The Lowell SMSA is next with 48% in manufacturing. The Brockton SMSA is the most highly diversified of the three outer areas with only 39% of its workforce engaged in manufacturing activities.

The pattern of 1950-1960 employment changes in the four SMSA's that contain the great bulk of all regional employment is shown in Figure 5. Since 1950 all three of the region's smaller SMSA's have lessened their emphasis on manufacturing and are beginning to expand in other functions. As compared to 1950, the Brockton and Lowell SMSA's increased in all non-manufacturing categories but transportation. In the Lawrence-Haverhill SMSA, the proportionate share in construction, finance, service, and government has increased over the ten years, but declines have occurred in the transportation and trade categories. In terms of tendencies toward economic diversification, the Boston SMSA has achieved economic diversity, the Lawrence-Haverhill area is lagging, Lowell is moving forward and Brockton is well on its way.

As these metropolitan areas become more closely linked with the Boston SMSA they benefit from its growth. Many large electronics firms originally located in the region because of the technical and professional resources of the cities of Boston and Cambridge, but later located new plants in suburban and outlying parts of the region. In addition, an increasing proportion of the Boston area's professional and other personnel are drawn from the three outlying metropolitan areas. As



EMPLOYMENT CHANGES 1950–1960

1950 MANUFACTURING

1960 MANUFACTURING

1950 NON MANUFACTURING

1960 NON MANUFACTURING

SOURCE: MASSACHUSETTS DIVISION OF EMPLOYMENT SECURITY.
DATA HAVE BEEN ADJUSTED FOR FULL COVERAGE.

overlapping of jobs and residences increases the region will become economically integrated to an even greater degree.

Personal Income Trends

Calculations of personal income are useful supplements to employment data since they provide a measure of the relative importance to the economy of such factors as wages, salaries, rents (including rent equivalents for owner-occupied homes), and dividends. They also provide a rough measure of net returns to professionals such as doctors, partners, and proprietors of unincorporated businesses and offer a general indication of the relative significance of welfare payments within the total income picture.

An income balance sheet has not yet been developed for the Boston region. It appears reasonable, however, to analyze regional income patterns by using data for the Commonwealth prepared by the U.S. Department of Commerce and 1970 income projections prepared by the Federal Reserve Bank.[1]

The proportion of Massachusetts personal income contributed by manufacturing is somewhat smaller than in heavily industrialized Rhode Island and Connecticut. In addition, since manufacturing is a lesser component of the employment pattern in the region than in the state as a whole (31% in the region as compared to 36% in the state) industrial wages and salaries probably provide a substantially smaller share of total personal income in the Boston region than they do in Massachusetts.

In terms of property income, Massachusetts is on a par with New England, a national center of property ownership and investment. If

1. Estle, Edwin F., New England's Personal Income Projected to 1970, Federal Reserve Bank of Boston, 1970 Projection No. 12, (December, 1959).

data for the Boston area, the regional headquarters of investors and other types of property owners could be separated out from state figures, the region would probably be found to derive an even more substantial proportion of its personal income from dividends and rents than is the case in the state as a whole.

The significance of transfer payments in the economy depends on (1) the proportion of low income aged persons in the total population, (2) the extent of unemployment, and (3) the financial ability (and willingness) of a state to pay for general assistance as well as for federally aided welfare programs. Transfer payments account for about eight per cent of total personal income in the Commonwealth as compared to only five per cent in Connecticut and six per cent in the nation. However, the percentage is probably far lower in the Boston region than in the state because the Boston SMSA, containing the bulk of regional population, has enjoyed unemployment rates running consistently below the state average.

The Federal Reserve study suggests that the proportions of total Massachusetts' personal income derived from wages and salaries will decline while the proportion derived from property income will increase sharply. The gain in the latter is linked to wider ownership of common stocks and realty properties. Within the wage and salary sector, the study projects a gain in the relative importance of manufacturing and a decline in the significance of government, a departure from national and regional trends. A sharp increase is projected in other labor income, primarily in wages and salaries paid to employees in service and trade activity. The share derived from proprietors income is expected to decline and the share of property income to increase in line with national trends in these two categories. Transfer payments are expected to grow even more in significance to the economy along with

contributions to social insurance. Overall, Massachusetts' share of national income is projected to decline although gains are expected to keep pace with projected population increases.

Trends in per capita income (total personal income divided by total population) are indicated in Tables 3 and 4. Table 3 indicates that Massachusetts per capita income was substantially higher than the nation in 1929 and 1940, fell to only 11% above the U.S. average in 1950 and climbed slightly by 1957.

Total personal income in Massachusetts is expected to increase (in constant dollars) by 43% between 1957 and 1970, a gain equal to the New England increase but substantially smaller than the 54% gain projected for the nation. Per capita income in the Commonwealth is also expected to rise, but at a slower rate than in the nation as a whole (Table 4.)

The Federal Reserve Bank study expects the leveling process to continue. Massachusetts is expected to slip back to a point about 12% above the national per capita figure in 1970, or roughly to its relative position in 1950. Connecticut, which benefits from an influx of high income residents who commute to New York, has remained well above the national average; its lead over the national figure is projected to decline to below 30%, roughly its 1950 position. Rhode Island, on the basis of an assumed improvement in its economic prospects may recapture some of the ground lost since 1950 which would once again place that state close to the Massachusetts level. This is related to the reduction of inter-state differentials in per capita incomes over the period 1920 to 1950 which has been noted in a number of publications.[1]

1. See for example, Harvey S. Perloff and others, Regions, Resources and Economic Growth. Published for Resources for the Future, Inc., (Johns Hopkins Press. Baltimore. 1960.)

On the basis of census figures, incomes in the region are close to the state level: the 1960 median family income in the state was $6,300, while the median family income in the Boston SMSA, $6,700, is about five per cent higher. The differential in employment patterns, unemployment rates, and other economic indices between the Boston SMSA and the outlying SMSA's undoubtedly accounts for the Boston area's higher incomes. This differential, however, has been slowly declining; in 1950, median family income in the Boston SMSA was 11% higher than that in the three outlying SMSA's combined but in 1960 Boston was only nine per cent higher. Increasing "regionalization," including more cross-commuting, will probably narrow the gap still further in coming years.

TABLE 3

PER CAPITA INCOME IN SELECTED STATES AS A PERCENTAGE OF U. S. PER CAPITA INCOME, 1929-1970

	1929	1940	1950	1957	1970 (proj.)
United States	100.	100.	100.	100.	100.
Massachusetts	130.	132.	111.	115.	112.
Connecticut	146.	154.	128.	139.	128.
Rhode Island	124.	125.	110.	98.	105.

Source: U. S. Bureau of the Census, Statistical Abstract of the United States, 1961, and Federal Reserve Bank of Boston, New England's Personal Income Projected to 1970, Op. cit.

TABLE 4

PER CAPITA PERSONAL INCOME IN SELECTED AREAS 1957-1970
(in 1957 dollars)

	Per Capita Personal Income		projected Increase	Per cent Increase
	1957	1970	1957 - 1970	1957 - 1970
United States	$2,043	$2,568	+$525	+25.7%
Massachusetts	2,346	2,883	+ 537	+22.9
Connecticut	2,855	3,276	+ 421	+14.7
Rhode Island	1,979	2,692	+ 713	+36.0

Source: Federal Reserve Bank of Boston, New England's Personal Income Projected to 1970, Op. cit.

Industrial employment in the Greater Boston Area [1] between 1947 and 1959[2] rose slightly from 389,000 to 409,000, an increase of five per cent. Although the level of employment did not change materially, two important structural changes occurred in the regional manufacturing pattern between 1947 and 1959. First, there was replacement of the region's traditional reliance on soft goods industries by an emphasis on technologically advanced hard goods. As can be seen in Table 5, three hard goods industries were responsible for a gain of 60,000 jobs: electrical machinery added almost 34,000 employees, transportation equipment 17,000, and ordnance over 9,000.[3] On the other hand, two soft goods industries suffered sharp setbacks. Textile employment

1. The statistics on manufacturing employment used in this section are covered data from the Massachusetts Division of Employment Security. The authors express their appreciation to the Greater Boston Economic Study Committee for allowing use of this data, which was developed by GBESC for use in the study, Industrial Land Needs Through 1980, Land Use Report No. 2, (May, 1962), prepared for GBESC by the Planning Services Group. In large measure, the analysis as well as data in this section is derived from that report.

2. 1947 represents the first full postwar production year and 1959 the most recent year for which comprehensive employment data for the region were available at the time of the GBESC study.

3. Much of the gain in transportation equipment, however, occurred at a single establishment, the Fore River shipyard, and represented more a return to war time levels of activity than a net gain, while another portion was a statistical change, the result of a reclassification of workers from the electrical machinery to the transportation equipment industry. The increase in ordnance employment is in part the result of a change in the classification of workers who, in most cases, are engaged in activities closely linked to electrical machinery production, and, therefore in reality represents a gain in electrical machinery jobs.

TABLE 5
MANUFACTURING EMPLOYMENT BY MAJOR CATEGORIES IN THE GREATER BOSTON AREA[1], 1947-1959

Manufacturing Industry	Employment (000's)		Change 1947-1959		Per Cent of Total Area	
	1947	1959	Number (000's)	Per Cent	1947	1959
High Growth						
Transportation Equipment	5.1	21.9	+16.8	+329.4%	1.3%	5.3%
Electrical Machinery	39.4	73.0	+33.6	+85.3	10.1	17.9
Rubber	17.5	22.6	+ 5.1	+29.1	4.5	5.5
Instruments	13.8	17.4	+ 3.6	+26.1	3.5	4.2
Stone, Clay and Glass	3.5	4.4	+ 0.9	+25.7	.9	1.1
Pulp, Paper	12.9	15.5	+ 2.6	+20.2	3.3	3.8
Moderate Growth						
Machinery (non-electrical)	28.1	30.7	+ 2.6	+ 9.3	7.2	7.5
Printing	24.5	25.6	+ 1.1	+ 4.5	6.3	6.2
Furniture	5.3	5.5	+ 0.2	+ 3.8	1.3	1.3
Apparel	30.9	31.6	+ 0.7	+ 2.3	7.9	7.7
Food and Kindred	36.2	36.5	+ 0.3	+ 0.8	9.3	8.9
Primary Metals	7.8	7.8	+ 0.0	+ 0.0	2.0	1.9
Declining						
Fabricated Metals	20.2	20.0	- 0.2	- 1.0	5.2	4.9
Leather	52.4	41.4	- 11.0	-21.0	13.4	10.1
Chemicals	13.5	10.6	- 2.9	-21.5	3.4	2.6
Miscellaneous	12.3	9.1	- 3.2	-26.0	3.1	2.2
Tobacco	0.3	0.2	- 0.1	-33.3	.7	.5
Lumber	4.5	2.9	- 1.6	-35.6	1.1	.7
Petroleum	2.5	1.4	- 1.1	-44.0	.6	.3
Textiles	58.3	21.3	-37.0	-63.5	14.9	5.2
New Industry						
Ordinance	-	9.2	+9.2	-	0.0	2.2
TOTAL	389.0	408.6	+19.6	+5.0	100.0	100.0

Notes to Table 5 on the following page.

Notes to Table 5.

1. The Greater Boston Area for which employment data are presented in this table differs somewhat from the Boston Metropolitan Region. See Figure 6 for a comparison.

Source: Massachusetts Division of Employment Security, through the courtesy of the Greater Boston Economic Study Committee.

declined by 37,000 jobs and leather by 11,000. Together, these two industries lost five jobs for every six jobs gained in the expanding regional electrical machinery complex. The second change, closely related to the first, involved a shift from a broadly diversified manufacturing structure to the beginning of a concentration in electrical machinery, ordnance, scientific instruments, and other closely related activities. By 1959, these three categories together represented 22% of total manufacturing jobs. Electrical machinery not only rose from third to first place among regional industries in the 1947 to 1959 period but together with the ordnance industry, provided twice as many jobs as the number two industry, leather products.

The rapid growth in the nation's electrical machinery, instrument and ordnance industries is attributable to the burgeoning expansion in demand for military and civilian electronics items since the early 1940's. With almost 70,000 persons employed in private electronic firms in 1959, the Boston region was one of four large electronics centers in the nation, the others being Los Angeles, Chicago, and New York. A recent estimate placed the number of research and development firms in the Boston region at 1,000, more than half of them independent engineering consultant firms. Despite the 1961-1962 "shakeout" in the electronics industry and a decline of the speculative fever for electronic stocks with high price earnings ratios, the rate at which new firms are being formed is estimated to run about 100 per year. Many of these firms are spin-offs from major research institutions and established companies. For example, the Raytheon Company, Massachusetts' largest private employer, estimates that 145 new firms have been originated by its former employees. At least 90 science-oriented area firms were founded by MIT faculty and personnel, including Raytheon itself. [1]

1. Business Week, "Boom Moves to the Hub ", June 9, 1959.

The region is fortunate in that most of its military equipment and communications production activities have been subject to rapid advances in technology. Boston's electronics industry lends itself to labor-intensive production rather than to long, stabilized production runs of the type which have proved susceptible to a high degree of automation.

With the exception of three industries, ordnance, electrical machinery, and rubber, the Boston Metropolitan Region has not participated to any great extent in the upsurge in employment in the nation's growth industries. In fact, between 1947 and 1959 its share in growing industries such as instruments, printing, and chemicals actually declined substantially, while it shared fully in the job decreases which occurred in the nation's six declining industries.

Regional employment in the electrical machinery, ordnance (closely linked to electrical machinery in the region) and instrument manufacturing industries represents over one sixth of national employment in these categories. The regional leather and shoe and rubber industries each have about a tenth of national employment. All other industries, including the textile industry, are a comparatively minor factor in the nation's industrial landscape, representing on the order of two to three per cent each of national employment in their respective groups.

The Boston region plays a major role in certain aspects of industrial New England but it is not as heavily dependent on manufacturing as the six-state area as a whole. In 1960 the region contained about a third of New England's population but only a little over a quarter of all manufacturing and wholesale jobs. The Boston region dominates New England employment in electrical machinery,

providing over half of the jobs in this category. Also, it contains a third of employment in five industries in the growth and moderate growth classification: apparel, printing, chemicals, rubber, and instrument manufacturing. The region's proportions of some of New England's declining or stable industries including textiles, primary metals, and non-electrical machinery is extremely small.

Industrial Structure in Regional Sub-Areas

A recent study prepared for the GBESC [1] divides most of the region into nine sub-areas which comprise either sectors or rings centered on the city of Boston and other built-up core communities (see Figure 6). Each of the sub-areas appear to have a reasonable degree of unity. However, inevitably, some communities at the edges of a sub-area tend to share certain characteristics of a neighboring sub-area. Newton, for example, is in many ways a part of the Route 128 western group of municipalities despite the fact that it borders directly on Boston. The Brockton-Taunton, Merrimack, and Lynn-Salem areas contain communities with central city characteristics as well as suburban and rural towns. Despite these limitations, it is believed that the sub-areas are reasonable working approximations of Greater Boston's economic components. [2] In the sections which follow, recent trends in industrial activities within each of the nine sub-areas are briefly described. Data summarizing sub-area manufacturing job changes can be found in Table 6.

1. GBESC, Industrial Land Needs Through 1980. (op. cit.).

2. The nine sub-regions omit a number of communities within the Boston Metropolitan Region but include one industrial center which is not included in the region: Taunton. For the most part the omitted communities contain little industrial activity, and Taunton is a relatively small industrial center (7,000 manufacturing employees).

TABLE 6

MANUFACTURING EMPLOYMENT BY SUB-AREAS OF THE GREATER BOSTON AREA, 1947 - 1959.

	Manufacturing Employment (000's) 1947	1959	Per Cent of Total Area 1947	1959
Boston Metropolitan Area [1]				
Core	184.7	166.5	47.5%	40.7%
Route 128 Band	28.0	54.2	7.2	13.3
Lynn-Salem	50.0	45.2	12.9	11.1
South Shore	12.8	27.5	3.3	6.7
Southeast Coastal	2.5	2.8	.6	.7
Lawrence-Lowell Metropolitan Area [2]				
Merrimack Valley	59.3	52.0	15.2	12.7
Brockton-Taunton [3]	28.7	28.8	7.4	7.0
Outlying Areas				
Northeast Coastal	3.8	4.3	1.0	1.1
Western	19.2	27.3	4.9	6.7
TOTAL	389.0	408.6	100.0	100.0

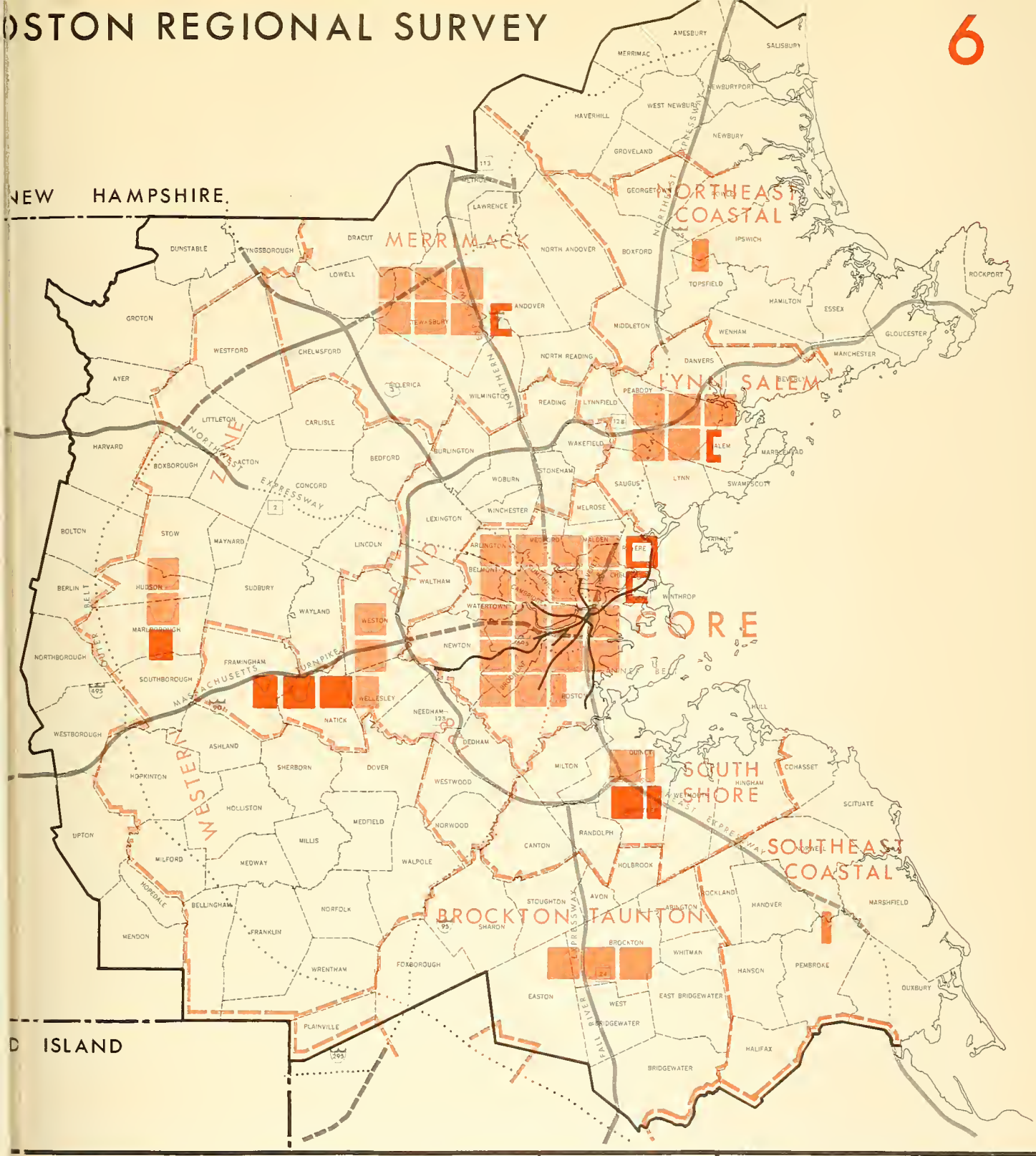
1. The listed sub-areas correspond generally to the Boston SMSA.
2. The Merrimack Valley sub-area corresponds generally to the combined Lowell and Lawrence-Haverhill SMSA's, excluding Haverhill.
3. The Brockton-Taunton sub-area includes most of the Brockton SMSA.

See Figure 6 for sub-area boundaries.

Source: Massachusetts Division of Employment Security, through courtesy of the Greater Boston Economic Study Committee.

)STON REGIONAL SURVEY

6



MANUFACTURING JOBS, 1947–1959

10,000 JOBS IN 1947

10,000 JOBS GAINED, 1947–1959

10,000 JOBS LOST, 1947–1959

SOURCE: GBESC, INDUSTRIAL LAND NEEDS THROUGH 1980

FOR THE MASS TRANSPORTATION COMMISSION

THE PLANNING SERVICES GROUP, CONSULTANTS

GENERAL INFORMATION

- EXPRESSWAYS
 - UNDER CONSTRUCTION
 - PROPOSED
- MAJOR HIGHWAYS
- SECONDARY HIGHWAYS
- MAJOR RAILROADS
- SECONDARY RAILROADS
- RAPID TRANSIT LINES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

NORTH

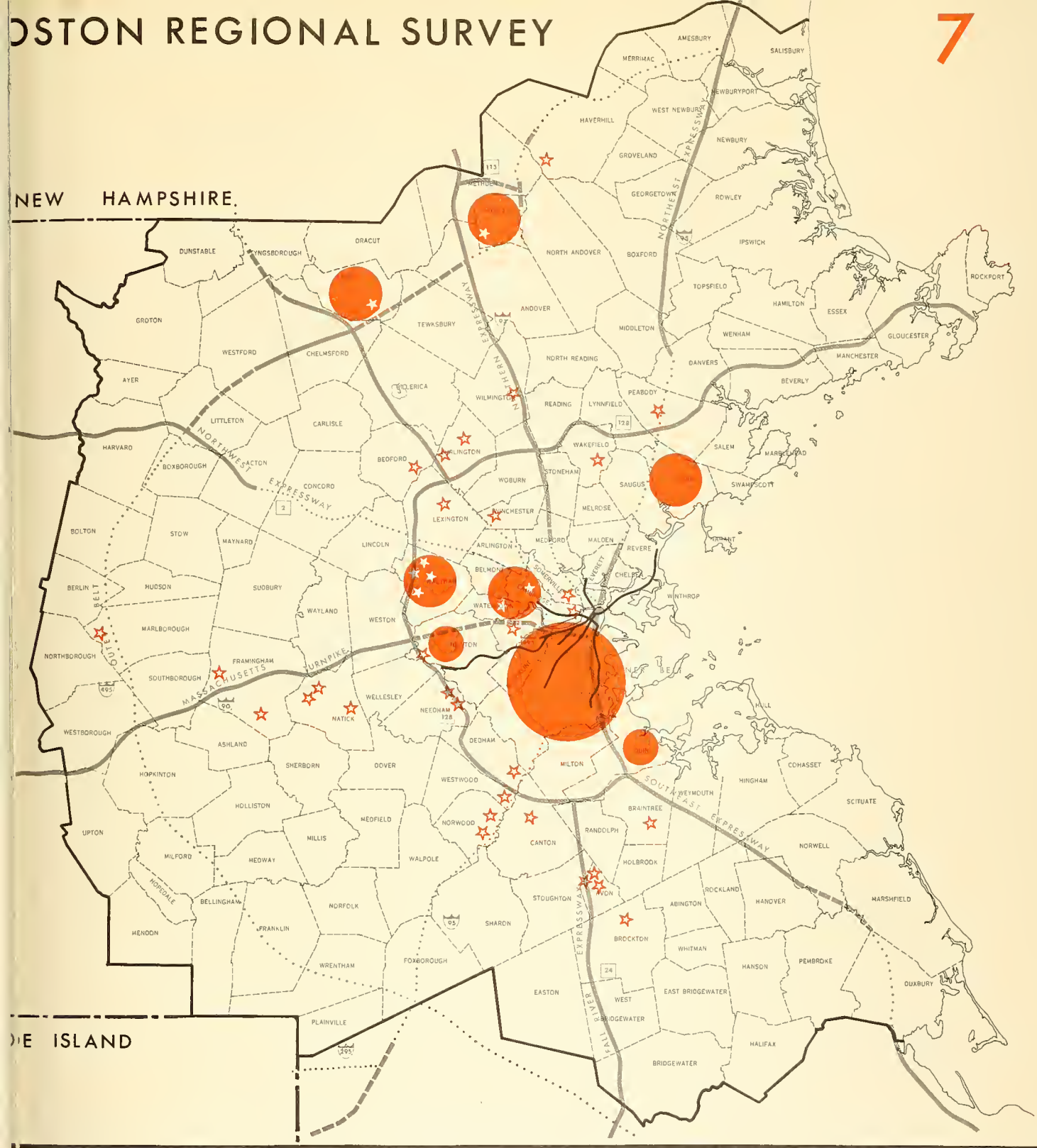
1 SQUARE MILES = 2560 ACRES

0 5 10 MILES

THE PREPARATION OF THIS MAP HAS BEEN FINANCED IN PART THROUGH AN URBAN PLANNING ASSISTANCE GRANT FROM THE U.S. HOUSING AND HOME FINANCE AGENCY UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

OSTON REGIONAL SURVEY

7



AJOR CENTERS OF ANUFACTURING EMPLOYMENT

MANUFACTURING JOBS, 1959

- OVER 30,000
- 20,000 – 30,000
- 10,000 – 20,000

☆ INDUSTRIAL PARKS IN OPERATION, 1961

GENERAL INFORMATION

- EXPRESSWAYS
 - UNDER CONSTRUCTION
 - PROPOSED
- MAJOR HIGHWAYS
- SECONDARY HIGHWAYS
- MAJOR RAILROADS
- SECONDARY RAILROADS
- RAPID TRANSIT LINES

NORTH

1 = 2560 ACRES

SQUARE MILES

0 5 10 MILES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

FOR THE MASS TRANSPORTATION COMMISSION

THE PLANNING SERVICES GROUP, CONSULTANTS

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Another aspect of manufacturing concentration in the region is shown in Figure 7, which indicates the major centers of manufacturing employment on a community basis.

Core Communities

The 15 Core communities contain only 6.6% of the region's total land area but nearly half of its industrial employment and population. The Core contained over 50% of all jobs in 1959 in a number of manufacturing industries including: food, apparel, printing and publishing, furniture, chemicals, rubber products, and primary and fabricated metals. Core-oriented industries do not include either electrical machinery, the region's leading growth industry, or textiles and leather products, the main declining industries.

The city of Boston is the chief industrial center within the Core, providing about 60% of Core manufacturing jobs. In the industrial category, Boston occupies a dominant position in several industries traditionally associated with central city location; the apparel and printing industries, for example, require good access to a large, low wage labor pool and to downtown financial and business services. In addition, Boston provides one third of regional employment, in miscellaneous manufacturing, and a fourth of the regional total in instruments and non-electrical machinery. On the other hand, Boston contains only ten per cent of regional electrical machinery employment. Cambridge, the only other industrial center of any magnitude in the Core, provides about one quarter as many jobs in manufacturing as Boston. Other employment centers are Newton, Watertown, Somerville and Everett. Together they contain over 30,000 manufacturing jobs, about a third as many as Boston.

Trends similar in some respects to those in the region as a whole characterized the Core area in the 1947 to 1959 period. There was a marked (58%) increase in electrical machinery employment. This increase, however, was concentrated in a very few communities, generally lying outside the central cities. Newton, for example, secured two thirds (4,600 jobs) of the Core area increase in this category, while Boston gained only 1,000 electrical machinery jobs. The Core experienced losses in textiles, food processing, apparel, leather goods, and fabricated metals. Boston bore the brunt of this loss and was the primary contributor to the eight per cent manufacturing employment decline in the Core between 1947 and 1959.

The Route 128 Band

The bulk of regional suburban industrial expansion in the 1947-1959 period occurred in the 16 communities adjoining Route 128 to the west of the Core area. The Route 128 Band contains approximately one eighth of the region's population, land area and manufacturing jobs.[1]

Electronics is the major industry along Route 128. In 1959 the electrical machinery industry supplied just over a third of the sub-area's total manufacturing and wholesale employment. In fact, almost a quarter of all regional electrical machinery jobs were concentrated here. Other major industries in the Route 128 Band include:

1. Two of the communities included in this group, Framingham and Natick, are not located directly on Route 128 but instead are immediately to the west on Route 9 and the Massachusetts Turnpike.

instruments, pulp and paper, non-electrical machinery production, and printing. Together, these four industries supply an additional 28% of the sub-area's manufacturing jobs and 17% of regional employment in these categories.

In manufacturing terms, the most important communities in the Route 128 Band are those due west of Boston. Over 60% of the sub-area's electrical machinery jobs are concentrated in Lexington and Waltham. Furthermore, almost two thirds of total manufacturing employment in the Route 128 communities was located in plants on or near the expressway. The northern and southern extremities of the Route 128 Band have experienced a slower rate of industrial expansion than the rest of the sub-area.

In the 1947 to 1959 period the Route 128 sub-region sustained minor losses in textile, leather, lumber and primary and fabricated metals employment but the loss amounted to less than 2,000 jobs. In contrast, there was a six-fold, 17,000 job increase in electrical machinery employment. This was accompanied by substantial gains in several other industries, particularly non-electrical machinery employment. The result was a near doubling of industrial employment between 1947 and 1959, the most striking gain of any of the component areas of the region. This gain placed the Route 128 Band in second place in the region in terms of numbers of manufacturing workers, where it had ranked fifth in 1947.

Lynn-Salem

The major industrial centers of Lynn, Peabody, and Salem lie to the northeast of Boston. They contain about five per cent of the region's land area, but provide approximately eleven per cent of regional manufacturing and ten per cent of

its jobs and population. The major industries are electrical machinery, non-electrical machinery, leather, and transportation equipment. Together, these four industries provide almost four ' fifths of the Lynn-Salem area's industrial jobs and 22% of regional employment in these categories.

Lynn-Salem, a long established industrial area, experienced a decline in industrial employment between 1947 and 1959. The area's seven per cent job loss in the 12 year period was occasioned by substantial declines in leather products, textiles and surprisingly, in electrical machinery employment. The latter was partly a result of reclassification, some of the apparent loss being concealed in gains of about 5,000 jobs each in transportation equipment and non-electrical machinery.

South Shore

To the southeast of Boston is the eight community South Shore area traversed by a recently constructed extension of Route 128 and the Southeast Expressway containing from six to seven per cent of the region's land area, population, and industrial jobs. Most South Shore employment is concentrated in Quincy, Braintree, and Weymouth. The area's principal industry is shipbuilding. The Fore River shipyard is the source of about 40% of the area's manufacturing jobs. Electrical machinery, representing 12% of South Shore employment, is primarily concentrated in Braintree.

Over the 1947-1959 period the South Shore transportation equipment industry experienced the most impressive numerical gain of all South Shore industry, an increase of 9,400 employees. Employment in electrical machinery, another growing industry on

the South Shore, increased from only 100 in 1947 to 3,300 in 1959. In all, the South Shore increased its share of regional employment from three per cent in 1947 to seven per cent in 1959.

Outlying Sub-Areas

Two of the five outlying sub-areas, Brockton-Taunton and the Merrimack Valley, contain sizable urban centers with concentrations of manufacturing employment while the remaining three sub-areas, are lightly populated, with farm land and small town centers mingled with residential subdivisions.

The Brockton-Taunton area contains about fourteen per cent of the region's land area and about half that proportion of its population and industrial jobs. The city of Brockton, traditionally strong in shoe production, has about 9,000 manufacturing employees, 4,000 of whom are in the leather industry. Taunton, a jewelry center, has 7,000 industrial jobs, of which nearly 2,000 are in jewelry and silverware production.

The level of manufacturing employment remained stable in the Brockton-Taunton area between 1947 and 1959, despite a sharp (40%) decline in leather and shoe jobs. The 4,000 job loss in the leather category, which had particularly adverse effects on Brockton, was counter-balanced by gains in instruments and other industries.

The second major urban center in the outlying areas of the region is the Merrimack Valley, containing the cities of Lawrence and Lowell. This area experienced a remarkable transformation in its industrial economy over the 1947-1959 period. The Merrimack Valley experienced a precipitious (31,000) decline in textile jobs. These were partially replaced by a gain of 16,000 jobs in electrical machinery

and ordnance, 4,000 in leather goods and apparel, and lesser expansions in other industries. As a result of these gains in non-textile industries, total Merrimack Valley manufacturing employment decreased by only 12% between 1947 and 1959, in spite of a 70% job decline in the dominant textile industry.

The three remaining sub-areas do not play a major role in regional industrial employment. They contribute only about eight per cent to the region's total industrial employment although they occupy 45% of the region's land area. The Northeast Coastal area, stretching from Rockport-Gloucester on the east to Middleton on the west, contains ten per cent of the region's land area, but only two per cent of its population and one per cent (4,000) of its manufacturing jobs. The Southeast Coastal area includes Marshfield, Scituate, and other communities which combine suburban, resort, and rural functions. This area contains one tenth of the region's land area and two per cent of its population but less than one per cent (2,500) of its manufacturing jobs. The third outlying sub-area is a large crescent-shaped territory to the west of Boston, reaching from the Rhode Island border in the south almost to the New Hampshire line in the north. This 29-community area contains one quarter of the region's land but only six per cent of its population and industrial jobs. A major beneficiary of the rapid expansion of the electrical machinery industry, almost 9,000 of its 27,000 manufacturing jobs are derived from this source. Most of the electrical machinery employment, however, is found in three of the area's 29 communities: Bedford, Wayland and Concord, all of which lie close to Route 128.

Section Five of this report examines the future prospects for manufacturing growth in each of the sub-areas of the Boston Metropolitan

Region, based on the findings of preceding studies.

Industrial Wage Rates

Manufacturing industries in the Boston region are concentrated primarily in the medium wage categories. Average factory wages in the Boston labor market area, which provided 84% of regional industrial jobs in 1960, were on a par with the nation and the New York area but substantially below levels in other major urban centers. (Table 7.) However, wages in the Boston area are well above levels in nearby metropolitan areas, including Lawrence-Haverhill, Lowell and Brockton. The Boston area's wage lead over Massachusetts as a whole increased during the nine-year period 1951-1960. Factory wages were about two per cent higher than the average for the Commonwealth in 1951 and by 1960 were eight per cent higher.

The reason for the major increase in the industrial wage level in the Boston region was upgrading, as can be seen in Table 8. The proportion of factory jobs derived from low wage industries dropped from 42% of the total in 1947 to 27% in 1959. Most regional low wage industries experienced a precipitous decline in the twelve-year period with textiles leading the loss group. In contrast, employment in eight medium wage industries rose; with electrical machinery and ordnance scoring the most impressive gains. Since the percentage of jobs in five high wage industries in the region did not change materially between 1947 and 1959, it is apparent that gains in medium wage industries were the principal elements in the region's upward shift in factory wage levels.

Boston regional trends were similar to those in the nation. Although the region experienced a far greater proportionate decline

in employment derived from low wage industries. By 1959 the percentage of factory jobs provided by low wage industries had decreased to a level close to that in the nation as a whole while the proportion derived from medium wage industries was higher than in the nation.

TABLE 7

AVERAGE HOURLY EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING FOR SELECTED LABOR MARKET AREAS, 1951 and 1960.

Area	Average Hourly Earnings		Per Cent Change
	1951	1960	1951-1960
Massachusetts	$1.50	$2.09	+39.3%
New England Labor Market Area			
Boston	1.53	2.25	+47.1
Providence-Pawtucket	1.39	1.87	+34.5
Hartford	1.68	2.40	+42.9
Other Labor Market Areas			
New York City	1.67	2.26	+35.3
Detroit	1.94	2.92	+50.5
Philadelphia	1.62	2.38	+46.9
Pittsburgh	1.79	2.80	+56.4
Chicago	-	2.49	-
United States	1.59	2.26	+42.1

Source: United States Department of Labor, Employment and Earnings.

TABLE 8

PER CENT DISTRIBUTION OF EMPLOYMENT IN MANUFACTURING INDUSTRIES BY WAGE GROUPS[1] IN THE GREATER BOSTON AREA, 1947 and 1959.

Wage Category	Per Cent in Each Wage Group			
	Greater Boston Area		United States	
	1947	1959	1949	1959
High Wage Group	14.8%	16.1%	24.7%	24.8%
Medium Wage Group	43.1	56.5	44.5	50.8
Low Wage Group	42.1	27.4	30.8	24.4
Total Number Employed (in 000's)	389.0	408.6	14,149.8	16,666.7

1. High wage group: earnings of $2.50 or over per hour in 1959.
Medium wage group: $2.00 - 2.49 per hour in 1959.
Low wage group: under $2.00 per hour in 1959.

Source: United States Department of Labor, Employment and Earnings for average hourly earnings in manufacturing industries.
The industries comprising each wage group were assumed to be the same for the Boston area and the United States. Boston area employment figures are from GBESC, Industrial Land Needs Through 1980, Op. cit.

This section examines recent patterns and trends in seven categories of the non-manufacturing portion of the Boston region's economy. The intent of the section is to provide a brief, realistic appreciation of important elements of the regional economy to serve as background to a subsequent section which considers future employment levels in non-manufacturing activities.

Where appropriate, sales levels are used as the principal yardstick of importance and change in non-manufacturing sectors. However, in the case of several of the categories considered in this section, such as government and construction, employment data are a more significant guide.

A. RETAIL TRADE

The Boston region is one of the nation's leading retail centers with over four billion dollars spent in its retail establishments in 1958. Retailing is a major source of regional employment, as well. In 1960, 2[illegible] % of the region's non-agricultural jobs were derived from this category. Although it is well behind New York, Los Angeles and Chicago, the region is on a par with the Philadelphia and Detroit areas and well ahead of San Francisco and Pittsburgh.

In the past decade major changes have occurred in the structure of metropolitan areas that have had an important impact on the functions and importance of central cities within these great urban complexes. One of the most significant is the phenomenon of suburbanization which tends to be best known in its housing and population aspects. However, suburbanization has also affected the retail sales pattern, although not to the same extent as population and housing. Virtually every major central city in the nation except San Francisco experienced losses in shares of metropolitan retail sales from 1948 to 1958. Many central business districts, Boston's included, have actually declined in absolute sales volume.

As can be seen in Table 9, regional sales in retail trade are overwhelmingly concentrated in the Boston metropolitan area.

The Boston SMSA accounted for almost 80% of the region's total receipts in 1958, the date of the latest Census of Business.[1] The three other metropolitan areas of the region accounted for 11% of the receipts with the remaining portions of the region accounting for nine per cent of regional retail sales. The Boston Central Business District is the major retail center in the region. In 1958 retail volume in the few hundred acres of territory that constitute downtown Boston was $403 million, almost a tenth of the regional total and more than the four outer cities combined.

In terms of trends, the region as a whole increased by almost 33% in retail sales volume between 1948 and 1954 and by an additional 13% in the four years between 1954 and 1958. This represents an annual increase of from three to four per cent over the decade. Component metropolitan areas within the region differ from the regional pattern although the shares of each have remained about the same. (See Table 10)

Regional central cities, while increasing in total receipts from retail sales in the ten years from 1948 to 1958, accounted for smaller proportions of their metropolitan area sales in 1958 than in 1948. The central city of Boston has lost more than the other regional central cities or suburban areas. In the ten year period from 1948 to 1958, the city of Boston increased in retail sales by 26% while the fast-growing suburban territory on or near Route 128 more than doubled in retail sales volume.

Brockton has not followed the pattern of the other three regional metropolitan areas in regard to suburbanization of sales. Brockton achieved a greater percentage gain in the 1954 to 1958 period (19%) than did the total metropolitan area (16%). However, the circumstances in Brockton are unusual

1. Retail sales data available from the U. S. Census of Retail Trade of 1948 and 1958 are based on the 1950 definition of the metropolitan area, rather than the 1960 Standard Metropolitan Statistical Area. See Figure 4 in the Population Chapter of the Boston Regional Survey for a comparison of the 1950 and 1960 definitions.

TABLE 9

RETAIL SALES IN THE BOSTON METROPOLITAN REGION SMA's AND CENTRAL CITIES, 1948, 1954 and 1958.

Area	Total Sales in millions			Sales Per Capita			Per Cent of Regional Total			Per Cent of SMA			Per Cent Change in Total Sales	
	1948	1954	1958	1948	1954	1958	1948	1954	1958	1948	1954	1958	1948-1954	1954-1958
SMA's														
Boston	2,190	3,010	3,385	924	1226	1347	76.6	79.5	79.4				+37.5%	+12.5%
Brockton	111	153	178	856	1004	1060	3.9	4.1	4.1				+38.4	+16.4
Lawrence	110	120	144	877	902	1047	3.9	3.2	3.4				+ 8.7	+20.2
Lowell	101	126	153	692	863	987	3.5	3.3	3.6				+24.8	+20.8
Cities														
Boston	1,063	1,321	1,340	1,327	1788	1923	37.2	34.9	31.4	48.6	43.9	39.6	+24.2	+ 1.5
Brockton	69	86	103	1,104	1253	1414	2.4	2.3	2.4	62.7	56.2	57.7	+24.2	+19.4
Lawrence	92	96	109	1,137	1281	1537	3.2	2.5	2.6	84.4	79.8	75.5	+ 4.6	+13.8
Haverhill	45	53	66	953	1178	1429	1.6	1.4	1.6	-	-	-	+17.7	+24.9
Lowell	90	104	120	929	1102	1304	3.2	2.7	2.8	88.2	82.1	78.7	+14.9	+15.8
Boston CBD	423	420	403	-	-	-	14.8	11.1	9.5	18.3	15.1	12.6	- .8	- 3.8
Area Outside Regional SMA's	345	375	404				12.1	9.9	9.5				+ 8.7	+ 8.0
Total Region	2,857	3,784	4,265				100.0	100.0	100.0				+32.5	+12.7

Source: U.S. Census of Business, 1948, 1954 and 1958. Figures for "Area outside Regional SMA's" are estimates based on a sample of cities and towns outside regional SMA's.

TABLE 10

PER CAPITA RETAIL SALES BY MAJOR CATEGORIES IN BOSTON METROPOLITAN REGION SMA'S AND CENTRAL CITIES, 1948 AND 1958 (in 1948 dollars)

Category	Standard Metropolitan Areas				Central Cities			
	Boston	Brockton	Lawrence	Lowell	Boston	Brockton	Lawrence	Lowell
Total								
1948	$ 924	$ 856	$ 877	$ 692	$1327	$1105	$1137	$ 929
1958	1107	871	858	810	1580	1162	1261	1070
General Merchandise								
1948	131	65	53	72	346	110	77	96
1958	138	85	77	72	286	167	143	117
Apparel								
1948	81	74	120	72	151	112	179	96
1958	82	77	81	59	143	149	129	99
Furniture								
1948	40	36	59	38	65	64	84	48
1958	48	33	42	31	79	60	72	48
Food								
1948	222	228	226	208	276	263	297	270
1958	268	248	234	221	291	276	307	258
Drug								
1948	32	25	31	21	33	29	38	22
1958	36	24	30	30	46	32	44	35
Automotive								
1948	108	112	91	65	94	130	107	77
1958	144	111	112	99	151	125	177	136
Other								
1948	310	316	297	216	362	397	355	320
1958	391	293	282	298	584	353	389	377

Source: U. S. Census of Business, Retail Trade, 1948 and 1958 and U. S. Census of Population, 1950 and 1960.

in that it contains a substantial amount of open, developable land and in recent years has exhibited population and land use trends more characteristic of a suburb than a declining central city. For example, suburban-type shopping centers have been established within the corporate limits of the city. In addition, the South Shore Shopping Plaza, a major regional shopping center, located within ten miles of downtown Brockton, was not opened until 1961.

Haverhill was not included by the Census Bureau in the Lawrence area until 1960 and while it does not maintain the sales volume of Lawrence it has not experienced a serious decline in retail activity. Haverhill is probably aided by the fact that it serves adjacent suburban New Hampshire communities as well as some in Massachusetts.

The other two regional areas, Lawrence and Lowell, follow the Boston pattern to some extent. The city of Lawrence increased its retail sales by only 19% between 1948 and 1958 while the rest of the Lawrence area increased by 87%. In Lowell the situation is even more striking. Sales in the central city increased by a third but the area outside of the city trebled in retail trade volume, aided considerably by suburban growth trends.

Perhaps the most striking effect of retail suburbanization is found in central business district retail sales trends. For example, over the 1948 to 1958 period the Boston CBD experienced a five per cent loss in retail sales volume. Since the greatest loss occurred in the 1954 to 1958 period, the downward movement seems to have increased its momentum.

A factor which must be taken into account in evaluating changes in retail sales is inflation . Prices as reflected in the Bureau of Labor Statistics Consumers Price Index, rose by about 20% during the 1948-1958 decade.[1] This probably indicates that retail sales volume would have had to be 20% greater in 1958 than in 1948 just to remain even with inflation. Measured in constant uninflated dollars sales volumes in the Boston CBD actually decreased by a fourth between 1948 and 1958, while retail trade in the region as a whole gained by only about a quarter.

1. U. S. Bureau of the Census, Statistical Abstract of the U. S. and U. S. Department of Labor, Bureau of Labor Statistics.

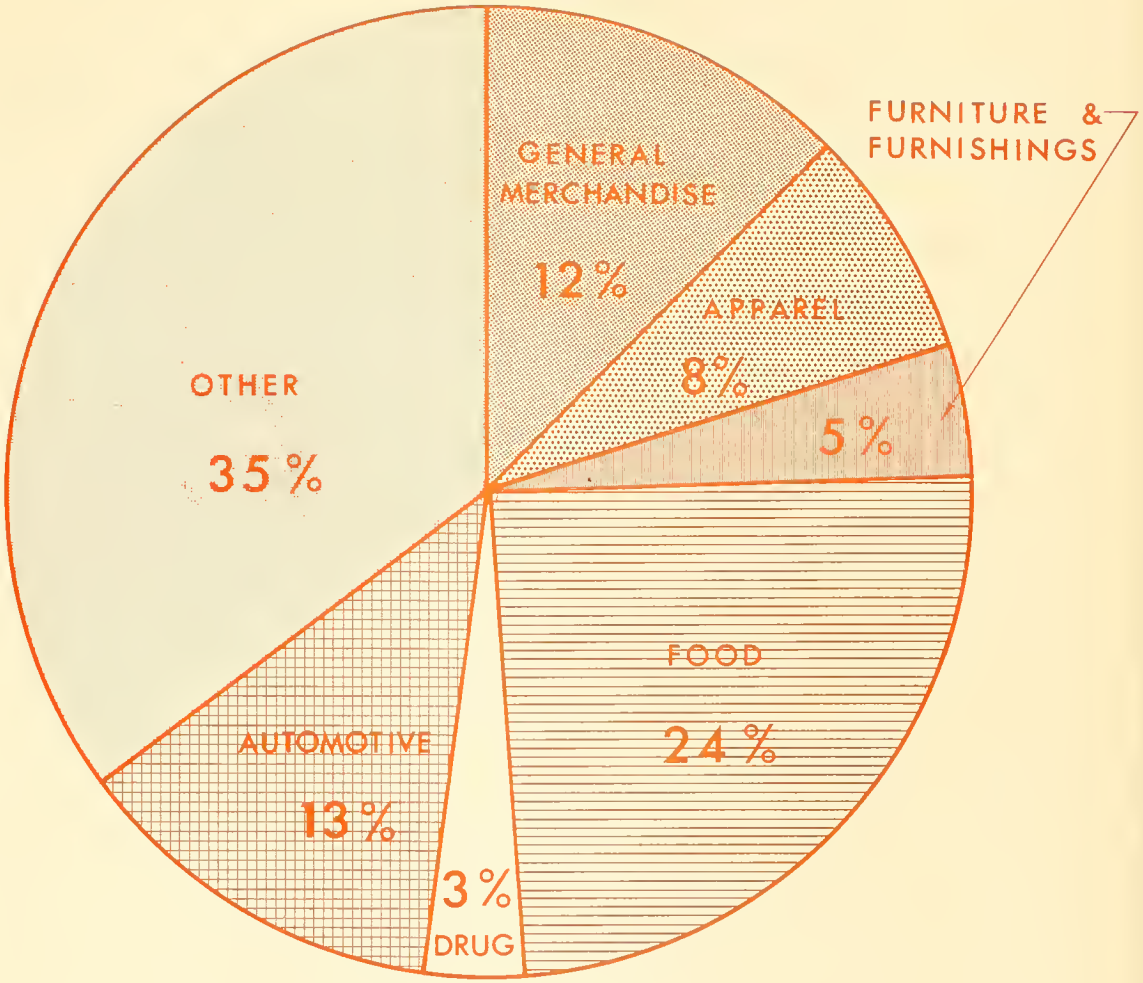
One of the more interesting phenomena shown in Table 10 is the rise in per capita sales in central cities. A gain in per capita sales indicates that sales have been rising faster than population or, in cases where population has declined, that sales have not dropped proportionately. Assuming that residents of cities do not spend much more per capita on retail goods than suburbanites, relatively high per capita retail expenditures in the central cities represent sales made to suburban shoppers. Viewed in these terms, regional central cities, especially Boston and Lawrence, were still capturing a substantial proportion of the retail spending of suburban residents in 1958.

Retail Trade by Category

The overall pattern of retail sales by major functional components is illustrated in Figure 8 for the Boston SMSA. The patterns for the three smaller SMSA's of the Boston region are generally similar.

The substantial overall increase in regional retail volume in the 1948-1958 decade conceals a number of significant variations among the various sales categories (See Table 11). Six categories, general merchandise, apparel, furniture, food, drugs, and automotive sales provide about two-thirds of the retail sales in the nation and in the region. Two of the six, food and automotive sales, increased by major amounts from 1948 to 1958. In the Boston metropolitan area, for example, a $150 million rise in food sales and a $100 million increase in automotive sales were responsible for almost 40% of the area's total increase in retail volume (measured in constant dollars) during the decade. Even more significant, the food and automotive group were the basis of half of the increase in the region's other three metropolitan areas.

Measured in constant dollars, rising real incomes in the region in the decade 1948-1958 were reflected in a 20% rise in total retail sales directed to a considerable extent, toward increased spending for food and beverages and on automobiles and other automotive equipment. In the Boston metropolitan area approximately $200 more per capita was spent for retail goods in 1958 than in 1948. Of this $200 gain, $46 went for food and $36 for automotive equipment. The bulk of the remainder of the increase ($81) went for the "other" category, a miscellany which includes gas service stations, restaurants, lumber and building materials, liquor stores, garden supply stores,



RETAIL SALES BY MAJOR CATEGORIES, BOSTON SMA, 1958

SOURCE: U. S. CENSUS OF RETAIL TRADE, 1958

TABLE 11

RETAIL SALES BY MAJOR CATEGORIES IN BOSTON METROPOLITAN REGION SMA'S AND CENTRAL CITIES, 1948 AND 1958. (in 1948 dollars)

Area	Total Sales (millions)		General Merchandise		Apparel		Furniture		Food		Drug		Automotive		Other	
	1948	1958	1948	1958	1948	1958	1948	1958	1948	1958	1948	1958	1948	1958	1948	1958
SMA																
Boston	2,190	2,781	311	346	193	207	94	121	527	672	76	91	257	360	732	984
Brockton	110	147	8	14	10	13	5	6	29	42	3	4	14	19	41	49
Lawrence	109	119	7	11	15	11	7	6	28	32	4	4	11	16	37	39
Lowell	102	125	10	11	10	9	5	5	28	34	3	5	9	15	37	46
Cities																
Boston	1,063	1,101	277	199	121	100	52	55	222	203	26	32	75	105	290	407
Brockton	70	84	7	12	7	11	4	4	17	20	2	2	8	9	25	26
Lawrence	92	90	6	10	14	9	7	5	24	22	3	3	9	13	29	28
Lowell	89	99	9	11	9	9	5	4	26	24	2	3	7	13	31	35
Boston CBD	423	336	208	166	74	47	18	17	20	11	4	4	1	5	98	86

Note: Retail sales totals may differ from those in other tables because of rounding.

Source: U.S. Census of Retail Trade, 1954 and 1958. 1958 data have been adjusted to SMA area. To adjust sales figures 1958 sales were reduced by 17.9%.

jewelry stores, camera stores, and other specialty stores. Only $17 of per capita gains was captured by general merchandise stores, $1 by apparel stores, $8 by furniture stores, and $4 by drug stores.

In contrast to food and automotive sales, volume in the general merchandise and apparel groups increased moderately in the 1948-1958 decade, rising by less than 14% in the case of general merchandise and only five per cent in the case of apparel. This was not a uniform pattern, however. Both the Lawrence-Haverhill and Brockton metropolitan areas scored major gains in general merchandise sales. The Brockton metropolitan area, site of growing regional shopping centers within the city borders, also registerd a major (30%) gain in apparel sales. The city of Brockton alone increased by over 50% in apparel sales volume and by over 70% in general merchandise. In contrast, Lawrence's $4 million increase in general merchandise volume was coupled with a $5 million decline in apparel sales, suggesting that a greater number of consumers shopped for clothing in department stores in 1958 than was true a decade earlier.

The significant change in regional retail trade structure between 1948 and 1958 has a number of locational implications. The suburbs of the Boston metropolitan area were the major beneficiaries of the shift in retail sales location. The most impressive gains occurred in categories which usually oriented toward automobile shopping and located outside Central Business Districts. General merchandise (which includes department and variety stores) and apparel, which together provided 64% of Boston CBD sales in 1958, were the region's slowest growing categories. Major decreases in both categories were experienced by Boston and its CBD between 1948 and 1958. Some of the decline in regional mass transit patronage is tied to the decline in retail sales in downtown Boston and other centers oriented toward transit shoppers.

In constant dollars, Boston declined by a total of $100 million in general merchandise and apparel sales in the 1948-1958 decade. Meanwhile, the rest of the Boston metropolitan area increased sales in the two "downtown" categories by about $150 million.

Furniture, which resembles general merchandise and apparel with respect to central city concentration -- almost 40% of 1958 Boston area sales were derived from establishments located in the city of Boston -- rose slightly in sales volume in the city during the decade. Once again, Boston's suburbs experienced the major increase; their $24 million increase in the decade was responsible for two thirds of the regional gain in this category.

Food tends to be among the most neighborhood-oriented of the retail categories. Food sales declined in the city of Boston in the decade by almost ten per cent while population declined by 13%. This major regional growth category is a minor component of CBD sales, providing only three per cent of the total in 1958. Boston's suburbs, the major recipients of the region's population growth, were responsible for about two thirds of the increase in regional food sales in the decade.

Automotive sales are usually concentrated in urban strip developments and consequently most central cities have claimed a major share of the substantial increase in this category. The Boston and Lawrence percentage of area sales was unchanged between 1948 and 1958, and while Brockton declined, Lowell increased its share. It is clear that Boston and Lawrence's population decline did not trigger a similar desertion by automobile row.

The central cities had not yet begun to feel the full impact of postwar suburban competition by 1958, the latest business census year. Only one of the Boston area's five largest regional shopping centers (Shoppers World at Framingham) was in operation prior to 1958. The North Shore shopping center at Peabody and Chestnut Hill at Newton did not go into full operation until late in 1958. The South Shore Plaza did not begin operations until 1961 and the Saugus operation opened in September, 1959. Additional regional, quasi-regional, and junior retail shopping centers in operation or planned for construction before 1965 will provide a really serious test of the competitive abilities not only of central city and secondary CBD retailing but will also trigger a major battle for retail sales between numerous suburban and Core area shopping complexes.

Two accompanying maps, Figures 9 and 10, graphically illustrate major features in the region's retail sales pattern. Figure 9 shows the cities with annual sales volumes in excess of $50 million; except for the outlying metropolitan centers, all are located within Route 128. The second map, Figure 10, illustrates the growing pattern of planned suburban shopping centers in the region, based on a recent survey conducted for the Boston Globe.

B. WHOLESALE TRADE

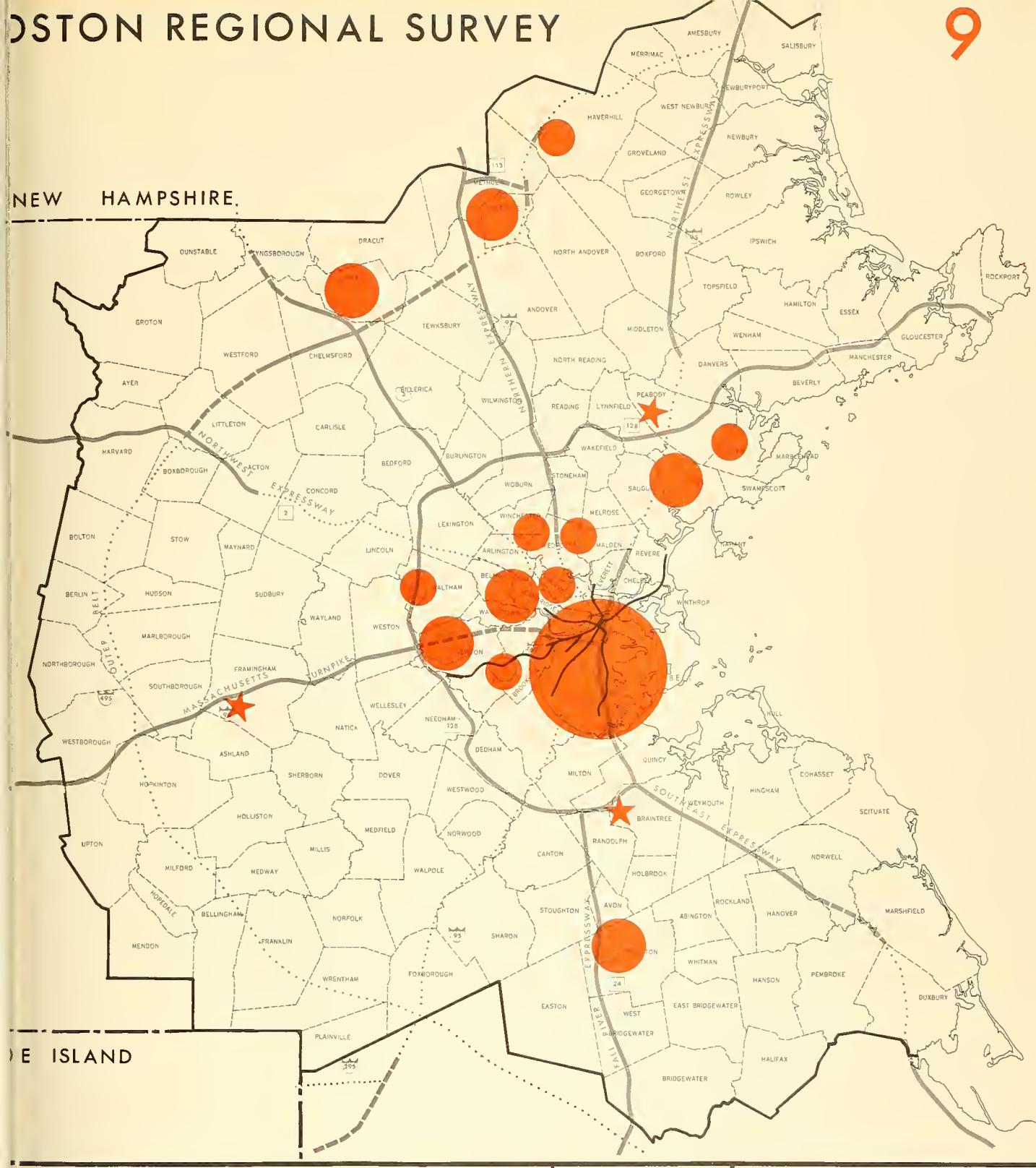
Employment in wholesale trade represents approximately a sixth of employment in the trade category and three per cent of all regional employment: In the nation five per cent of employment is in the wholesale category. While wholesale trade is not prominent in terms of number employed, dollar volume sales exceed those for retail trade and the rate of increase in wholesale trade volume and jobs indicates that it is one of the region's growth sectors. However, the nine per cent increase in wholesale employment between 1947 and 1958 was exceeded by an increase in sales in the same period of about 20%, measured in constant dollars.

The Boston metropolitan area dominates sales in this sector of the regional economy, with 96% of all wholesale sales. The Brockton and Lawrence areas together claim only three per cent of all regional wholesale trade and the Lowell area only one per cent.

Suburbanization is the major feature of the wholesale category albeit to a somewhat lesser extent than is the case in the retail and manufacturing sections of the economy. Table 12 illustrates this trend in the cases of the Boston and Lowell areas. The Brockton and Lawrence areas, neither of which plays a major role in wholesaling as compared to Boston, exhibit mixed trends with respect to suburbanization of wholesale trade.

In recent years, manufacturers, particularly in large corporations, have increased the practice of establishing a system of regional and local warehouses to distribute their products as opposed to construction of numerous manufacturing branch plants. This method of distribution permits closer control over centralized manufacturing operations and offers considerable

OSTON REGIONAL SURVEY



MAJOR CENTERS OF RETAIL SALES

RETAIL SALES, 1958

- OVER $1,000 MILLION
- $100 - 1,000 MILLION
- $50 - 100 MILLION
- ★ MAJOR SHOPPING CENTERS

GENERAL INFORMATION

- EXPRESSWAYS
 - UNDER CONSTRUCTION
 - PROPOSED
- MAJOR HIGHWAYS
- SECONDARY HIGHWAYS
- MAJOR RAILROADS
- SECONDARY RAILROADS
- RAPID TRANSIT LINES

NORTH

1 SQUARE MILES = 2560 ACRES

0 5 10 MILES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

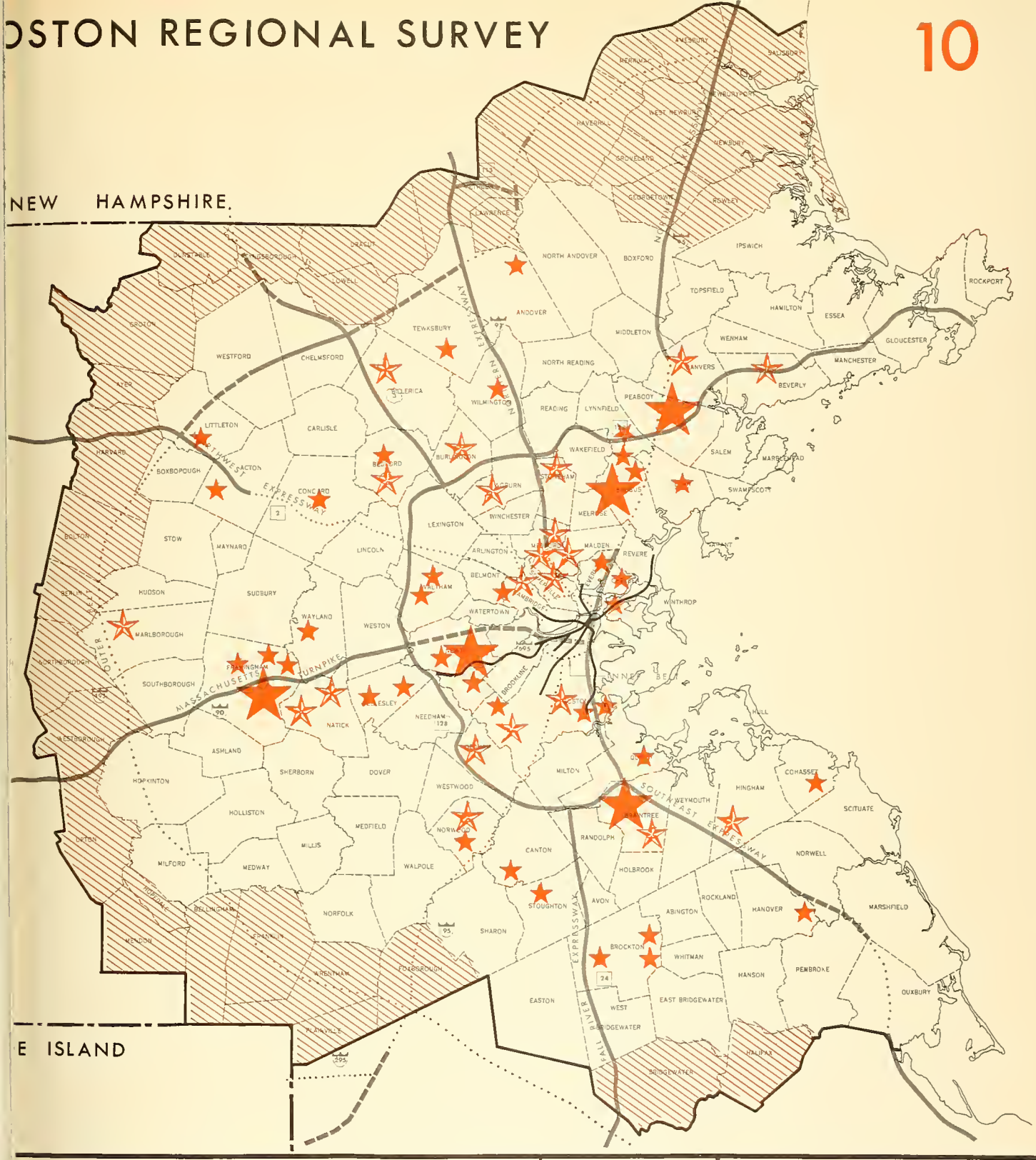
FOR THE MASS TRANSPORTATION COMMISSION

BY THE PLANNING SERVICES GROUP, CONSULTANTS

THE PREPARATION OF THIS MAP HAS BEEN FINANCED IN PART THROUGH AN URBAN PLANNING ASSISTANCE GRANT FROM THE U.S. HOUSING AND HOME FINANCE AGENCY UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

OSTON REGIONAL SURVEY

10



PLANNED SHOPPING CENTERS

- REGIONAL
- COMMUNITY
- NEIGHBORHOOD
- NO DATA

SOURCE: THE BOSTON GLOBE, SHOPPING CENTERS AND SHOPPING DISTRICTS IN THE BOSTON MARKET, APRIL, 1962.

GENERAL INFORMATION

- EXPRESSWAYS
 - UNDER CONSTRUCTION
 - PROPOSED
- MAJOR HIGHWAYS
- SECONDARY HIGHWAYS
- MAJOR RAILROADS
- SECONDARY RAILROADS
- RAPID TRANSIT LINES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

NORTH

2560 ACRES = 1 SQUARE MILES

0 5 10 MILES

FOR THE MASS TRANSPORTATION COMMISSION

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TABLE 12
WHOLESALE SALES IN BOSTON METROPOLITAN REGION SMA'S AND CENTRAL CITIES, 1948, 1954 and 1958

Area	Total Sales (millions of dollars) 1948	1958	Per Cent Increase 1948-1958	Per Cent of all SMA's 1948	1958	Each City as a Per Cent of its SMA 1948	1958
SMA							
Boston	$ 5,156	$ 6,018	+16.7	97.2%	96.3%		
Brockton	48	95	+97.1	.9	1.5		
Lawrence	62	89	+43.3	1.2	1.4		
Lowell	36	51	+43.1	.7	.8		
Cities							
Boston	4,567	3,987	-12.7			88.5%	66.2%
Brockton	42	82	+96.5			86.3	91.6
Lawrence	57	77	+34.9			92.5	87.1
Lowell	30	42	+34.5			84.5	81.9

* 1958 dollars are reduced by 12.4% based on the Wholesale Trade Index.

Source: U.S. Census of Business, Wholesale Trade, 1954 and 1958.

flexibility in serving local and regional markets. Many of the new warehouses have been built on or near major expressways in suburban locations. As a result, Boston's share of wholesale trade volume has been declining. Measured in constant 1948 dollars, the city of Boston lost 17% of its 1948 trade volume by 1958; meanwhile, an impressive 245% gain in wholesale sales occurred in the metropolitan area outside the city of Boston.

Analysis of community wholesale patterns indicates that Cambridge is the second city in the region with almost $450 million in wholesale sales. Cambridge volume was only about ten per cent of the Boston level but was almost twice as great as the combined total of the region's four outer cities. After Cambridge, the centers of retail trade in the region are Newton and Watertown with $230 million and $180 million, in sales respectively. The increase in wholesale volume in the cities and towns within the Boston standard metropolitan area outside the city of Boston between 1948 and 1958 was far in excess of that in any other section of the region.

C. SERVICES

Services are becoming an increasingly important component of national and regional employment. In 1960 approximately 14% of national non-agricultural jobs and 18% of regional employment was provided by the service category. The sales increase in regional service establishments between 1950 and 1960 was twice as great as the increase in retail sales volume. In this category some degree of suburbanization is apparent in such trends as the increasing pace of highway-oriented motel and drive-in theater construction in suburban and outlying areas as compared to relative stagnation among taxi and transit-oriented downtown hotels and movie theaters. However, strong central city concentration is still evident in most service activities. Within the region as a whole, the Boston metropolitan area captures over 90% of service receipts with over 50% accounted for by the city of Boston, proportions which have changed little since 1954.

The service category, an extremely broad classification, includes: (1) business services such as advertising, photo finishing and blueprinting; (2) personal services such as beauty shops, barbershops, laundries and

cleaning establishments; (3) repair operations such as automobile repair shops and appliance repairs; and (4) lodging and entertainment services. The business services have been expanding sales rapidly in recent years while the other categories have declined in terms of their proportion of total receipts. In the region as a whole, business services contributed almost 40% to total service receipts in 1958, a sharp gain over 1954. Furthermore, the business services have increased their sales shares in each of the region's four metropolitan areas.

In contrast to business services, other sectors of the services category tend to be highly susceptible to technological changes. Home beauty care and shoe-shining, permanently pleated and wash and wear garments, and home laundry equipment have had an adverse effect on personal services receipts. Sales of motion picture tickets and admissions to other types of recreation facilities have suffered in competition with television and other types of consumer recreation. On the other hand, automobile and appliance repair increased substantially throughout the region, reflecting the increased ownership and growing complexity of motor vehicles and consumer appliances.

D. GOVERNMENT

Federal, state and local government employment is one of the nation's major sources of jobs and in the past three decades government has been one of the fastest growing sectors of the economy. In the 1950-1960 decade employment in government increased by 50%. Aside from the armed forces, there are about nine million government workers in the nation, one sixth of total non-agricultural employment. Of this total, only 2.2 million are federal employees. Most of the remaining 6.8 million (70% of the total) are local government workers, and three quarters of these are school teachers, or are employed in school administration. The major growth in the past decade has been in state and local government; the federal payroll increased by only ten per cent between 1950 and 1960, rising only about half as fast as the rate of population expansion. In contrast, total state and local jobs rose by 75%, almost four times faster than population. Most of the increase is attributable to rising school enrollments.

TABLE 13

SELECTED SERVICE RECEIPTS IN BOSTON METROPOLITAN REGION SMSA'S AND CENTRAL CITIES, 1954 and 1958

SMSA	Receipts in Each Year: Total Receipts (millions) 1954	1958	Percent of Total Personal Services 1954	1958	Misc. Business Services 1954	1958	Misc. Repair Services 1954	1958	Amusement, inc. Motion Picture) 1954	1958	Total Percent Increase 1954-1958	Per Cent of All SMSA'S 1954	1958	Each City as a Per Cent of its SMSA 1954	1958
Boston	$412	$588	27.4%	22.9%	28.7%	39.8%	6.8%	6.1%	18.8%	14.1%	42.8%	92.1	92.4		
Brockton	11	16	45.5	44.2	10.6	14.4	12.0	11.0	12.8	10.2	47.7	2.5	2.6		
Lawrence*-Haverhill	15	21	49.4	42.2	6.5	11.0	19.4	21.0	13.1	9.3	34.8	3.4	3.3		
Lowell	9	11	49.3	51.2	4.9	9.9	12.4	9.4	17.7	11.1	25.9	2.0	1.7		
TOTAL FOR SMSA'S	447	636	29.1	24.6	27.0	37.7	7.4	6.7	18.4	13.8	42.2	100.0	100.0		
Cities															
Boston	252	339									34.6			61.0	57.5
Brockton	7	9									15.8			66.6	52.1
Lawrence & Haverhill	11	14									29.6			68.1	65.5
Lowell	8	10									24.2			86.7	85.6

Note: The 1954 figures are for SMA areas except that the city of Haverhill was added to the Lawrence SMA in 1954 to make the 1954 coverage more comparable with 1958.

Source: U.S. Census of Business, Selected Services, 1954 and 1958.

Much of the same trend has been apparent in the Boston region, where federal, state and local government provide about an eighth of total non-agricultural employment. Table 14 indicates that the increase in government jobs in the region in the past decade has been proportionately greater than population gains. Total government employment in the four regional SMSA's between 1950 and 1960 rose by almost a third as compared to a combined population gain of less than ten per cent.

The Boston metropolitan area dominates the region in terms of government employees. Lawrence-Haverhill, site of a major Bureau of Internal Revenue center, ranks second, with Lowell and Brockton third and fourth.

E. FINANCE, INSURANCE AND REAL ESTATE

Finance, insurance and real estate is one of the nation's growth industries. National employment in the category grew by 36% between 1950 and 1960, achieving a level of almost 2.5 million in 1960. Impressive percentage increases occurred in insurance carriers (41%) and banks and trust companies (55%). The security dealer and exchange group grew by a major 68%. Only a modest 13% gain occurred in the finance agencies and real estate sub-sector.

Finance, insurance and real estate is a particularly critical sector of the economy for large urban centers. It is of considerable significance therefore that gains in this category are found within major metropolitan areas, and are concentrated in central business districts. Gains in insurance and finance (real estate employment has been relatively stable) have compensated for much of the employment lost in downtown areas as a result of the relocation of manufacturing and wholesaling industries to the suburbs. Among other effects, this trend has helped to decelerate the decreases in journey-to-work riders on mass transit systems which resulted from the decline in core area manufacturing activities.

The Boston region has experienced much the same pattern of employment change in this category as the nation. The bulk of employment, as

TABLE 14

GOVERNMENT EMPLOYMENT IN BOSTON METROPOLITAN REGION SMSA'S, 1950 - 1960

SMSA [1]	Employment (thousands) 1950	1960	Per Cent Increase 1950-1960
Boston	107.5	142.2	+ 32.3%
Brockton	3.2	4.2	+ 31.3
Lawrence-Haverhill	4.2	5.3	+ 26.2
Lowell	3.5	4.9	+ 40.0
TOTAL FOR SMSA'S	118.4	156.6	+ 32.3

1. The Division of Employment Security's definition of Metropolitan Areas is approximately equal to Bureau of Census SMSA areas. The Division of Employment Security does not include government in its covered employment counts. These figures are available for the Boston area in Employment and Earnings. Employment in government in the other three areas has been estimated from Census figures. (See also notes to table 1).

Source: U. S. Department of Labor, Employment and Earnings, and U. S. Census of Population, 1950 and 1960.

might be expected, is found in the Boston SMSA which contained 92% of all regional employment in finance in 1960 (compared to 95% in 1950), most of it concentrated in downtown Boston. As is the case in many other facets of the region's economy, regional dominance by Boston has been diminishing but in this instance the decline is extremely slow. While the actual level of employment in the region's three other SMSA's and outlying territory is not high, (6,500 in 1960), their combined growth in finance employment was a sizable 50% between 1950 and 1960.

Data dealing with sub-categories of finance, insurance and real estate are available only for the segments of the Boston SMSA covered by the Massachusetts Division of Employment Security. The pattern of growth in Boston is similar to that in the nation in several respects. As in the nation, employment in securities and investment experienced the largest (55%) percentage increase in the Boston metropolitan area between 1950 and 1960, and banking follows with a 45% increase.

In the Boston SMSA, unlike the experience of the United States, real estate employment declined by 12%. This decline is probably partly the result of the moderate growth rate in many sectors (particularly construction) of the Boston economy, and possibly of a trend toward concentration of real estate activity in larger scale operations, a factor which tends to reduce employment in this sub-category.

The Finance Function

The Boston region's important role in the nations's financial pattern is only partly indicated by employment figures. Boston has traditionally been a leading center of commercial banking, investment and trust activity. As measured by the origination and distribution of security issues and by the number of large institutional and private buyers, the Boston area occupies a tertiary position behind New York and Chicago. Boston is clearly New England's financial hub: In 1959 22 underwriting firms had their main offices in Boston as compared to only 15 firms, most of them relatively small, which had their main office elsewhere in New England.

Boston is also a leader in insurance. The life, fire and marine and casualty groups located in New England, account for about a fifth of the assets of these institutions in the nation, and Boston and Hartford contain most of New England's insurance headquarters. The assets of New England investment trusts, most of them centered in Boston, represent over 30% of the total assets of the nation's open end trusts.[1] Aided by a well founded reputation for prudent shrewd management, Boston has traditionally been a leader in the investment business. Within New England, Boston provided much of the capital for the textile industry, the railroads, and public improvements. In addition Boston capital helped to finance ventures in other parts of the nation, including such diverse efforts as the copper industry, electrical equipment and public utilities, automobiles, communications, and household products.

With the unification of the nation's capital market, Boston has lost much of its distinctive position in the marketing of securities. As a rule, Boston firms now originate only local issues, particularly in such fields as electronics, and smaller sized municipal issues. Much of the current underwriting activity of Boston investment houses is as participants with firms elsewhere in the nation. However, Boston has been a leader in the formation of risk capital enterprises including the American Research Development Corporation and a number of Small Business Investment Corporations which have provided funds for a number of technologically advanced industries in the region and elsewhere in the nation.

1. Federal Reserve Bank of Boston, A History of Investment Banking in New England. Annual Report for 1960.

Boston commercial banks also play a significant part in providing operating capital for business and industry as distinct from the equity capital provided through investment banks. In addition to satisfying local needs, substantial amounts of capital have been loaned to firms outside the region including commodity operations, the oil and motion picture industry, and real estate ventures.[1]

Boston's share of regional financial activity has not decreased materially in the past decade. Aside from the large number of New England trust and investment houses which cling to locations in Boston's financial district, Boston's share of New England commercial bank deposits declined.

F. TRANSPORTATION, COMMUNICATIONS, AND PUBLIC UTILITIES

National employment in the transportation, communications and public utilities category has remained essentially stable in the past ten years. Increasing by only one per cent in the 1950-1960 decade, employment in this category attained a level of about four million in 1960. Two major cross currents have occurred within the category. Employment in communication and public utilities increased while the larger transportation subcategory declined. Since utilities and communications represent only 37% of total employment in the category, they do not have as great an effect on the trend for the group as does transportation. The moderate 11% increase in communication and public utilities jobs in the decade barely counterbalanced the six per cent decline in transportation employment.

The decline in national transportation employment is entirely attributable to a decline in the interstate railroads. Employment in this subcategory declined by 400,000 in the decade. Reductions in local railways and bus lines were responsible for a decrease of 35,000 jobs. On the other

1. Federal Reserve Bank of Boston, Commercial Banking in New England 1784-1958, (1959).

hand, employment in trucking and warehousing increased by over 200,000. This lends some support to the assertion that changes in taste and technology which cause a decline in employment in one part of the economy usually work to increase job levels in other industries.

Regional employment in transportation declined by nine per cent in the 1950 to 1960 period with the Boston SMSA responsible for the bulk of the loss. Within the sub-categories of transportation the Boston SMSA lost under a thousand jobs between 1950 and 1960 in the local and suburban railways and bus lines category. However, as in the nation, the loss was partially compensated for by a gain in trucking and warehousing jobs.

G. CONSTRUCTION

Contract construction provided about five per cent of the non-agricultural jobs in the nation and four per cent in the Boston region in 1960. Levels of construction employment are closely associated with population expansion as reflected in home building and related activities. Until the mid-1950's this was one of the nation's fastest growing industries, employment having more than doubled between 1940 and 1956. However, partly because of changes in equipment and techniques, there has been little change in construction employment levels in the past six years.

The total dollar value of construction in the nation increased by two and one-half times in the 1950 to 1960 decade but in Massachusetts the increase was only about 50%. So far as can be determined (changes in classification make precise comparisons hazardous) regional employment changes were consonant with trends in construction activity.

The value of construction contracts rose in the city of Boston by only about a third between 1950 and 1960, somewhat less than in the region as a whole. (However, in Cambridge, site of two large expanding universities, volume nearly trebled.) It should be pointed out that Boston's substantial increase in construction contracts in the decade is in contrast to a large number of cities where the value of construction declined by more than ten per cent. These include major urban centers such as Philadelphia, Cleveland, Detroit, Pittsburgh, as well as smaller cities such as Worcester, Fall River, New

Bedford, New Haven, and Providence. Moreover, the increased pace of urban renewal programming and private development in the region since 1960, much of it concentrated in Boston, points to major gains in construction activity over the 1960-1970 decade.

Changes in dollar value of construction in the past decade must be assessed in terms of inflationary trends in construction costs. The index of construction costs increased by 76% between 1950 and 1960.[1] Taking this factor into account, it can be seen that the increase in physical volume of construction was far less spectacular than the increase in dollar volume.

1. Construction volume and cost figures are taken from Statistical Abstract of the United States, 1961, Table Nos. 1057, 1055, 1056 and 1053.

It is difficult, even hazardous, to prepare precise employment predictions in view of the uncertainties created by the rapid pace of change in modern technology. Such factors as automation, competition between different types of goods and services, and the future role of national defense in the economy, are apt to play major roles in determining the 1970 and 1980 patterns of regional industrial employment. The projections and analysis of trends presented below should be viewed in terms of the assumptions upon which they are based. They are intended to indicate the direction and overall magnitude of employment growth in the region rather than its detailed composition.

The projections for future levels of regional employment are based on several sources. Employment projections for manufacturing industry, which is in many ways the mainstay of the regional economy, are taken from an industrial land need study prepared for the Greater Boston Economic Study Committee. [1] This was in turn based in part on New England projections prepared for the Federal Reserve Bank of Boston. [2] Employment trends for the non-manufacturing sector of the regional economy have been based on overall regional labor force projections prepared by GBESC [3] and an extrapolation of the recent population and employment trends in the Boston Metropolitan Region presented in this and preceding reports of the Boston Regional Survey. Another source that has been utilized as a general guide is a set of projections developed for the New York Metropolitan Region Study. [4]

1. GBESC, Industrial Land Needs Through 1980, Op. Cit.
2. Shen, T.Y., New England Manufacturing Industries in 1970, 1970 Projection No. 1, prepared for the Federal Reserve Bank of Boston.
3. Burtt, Everett, J., The Labor Force of Greater Boston, Economic Base Report No. 1, prepared for the GBESC, (June, 1959).
4. Berman, B. R., Chinitz, B., and Hoover, E. M., Projection of a Metropolis, (Harvard University Press, Cambridge, Massachusetts, 1961.)

In general, the Boston region appears to look forward to a productive ten years in the period between 1960 and 1970, gains in employment may more than keep pace with projected population growth. Manufacturing employment is expected to increase by almost 17%, with gains concentrated in the electronics and related industries. Among the non-manufacturing sectors, employment in finance, service and government are expected to increase substantially. However, trade and construction employment, both closely linked to population trends, may increase only moderately. Only the transportation category is likely to decline as a source of jobs, a trend which seems inescapable in view of the inroads of the private motor vehicle and continued automation in the field of transportation.

It also appears likely that the regional distribution of employment will change substantially by 1970. The bulk of employment increases in government, finance, and services will undoubtedly occur in and around the city of Boston since these categories are traditionally central city-oriented. In contrast manufacturing and retail trade will probably continue to display continued tendencies toward suburbanization.

Manufacturing Employment Projections

Projections for 1970 manufacturing employment in Greater Boston indicate a considerable improvement in the region's employment level as compared to 1957 (and 1959) levels.[1] This is contingent on major gains in electronics employment. Given this gain, the region's industrial employment will probably expand substantially since the loss potential in the declining textile and leather manufacturing categories has been drastically reduced by past declines in these industries.

1. Industrial employment projections for New England prepared by the Federal Reserve Bank of Boston were used in a recent GBESC stucy as the basis for these Greater Boston projections. It should also be noted that these projections were made as a basis for forecasting future land use needs. For further information, see GBESC, Industrial Land Needs Through 1980.

In contrast to a job gain of less than two per cent between 1947 and 1957 a 20% increase is forecast from 1957 to 1970. The absolute increase in manufacturing jobs would be ten times as great in the latter period as compared to the former. Gains are expected to be concentrated in only a few industries, particularly electrical machinery. The projection of striking increases for the electrical machinery industry by 1970 is based on a retention of the region's 1957 share of projected New England 1970 employment in this category. It is important to note that the Boston region significantly increased its share of New England electrical machinery jobs between 1947 and 1957 (from 36% to 53%). Greater Boston's gain in this category was greater than that for all New England; the six-state area outside Greater Boston experienced a net employment loss in this national growth industry during the decade. (See Figure 11.)

The total industrial job gain forecast for 1970-1980 is approximately equal to that projected for the 1957-1970 period. Again, the largest gains are predicted to occur in the electrical machinery and instruments categories, both of which are technologically advanced industries for which the region appears to have significant locational assets. Further losses are anticipated in textile and leather employment with the former, once the mainstay of the region, being reduced to relative insignificance by 1980. Fortunately, other regional industries appear ready to compensate for these textile losses. Comparisons of the 1970 and 1980 projections of manufacturing employment with anticipated labor force figures for the region suggest a continuation of the 1947-1959 pattern of about a third of the labor force engaged in industrial activities.

Regional Sub-Area Manufacturing Projections

The projections of sub-area shares of Greater Boston manufacturing employment shown in Table 15 are based on extrapolations to 1970 and 1980 of the changes in each sub-area's share of regional employment between 1947 and 1957. [1]

1. Significant departures were made from this technique in the case of four industries where unusual conditions were involved: non-electrical machinery, electrical machinery, transportation equipment and instruments. See Industrial Land Needs for an explanation of the changes.

As noted in Table 15 further substantial increases in industrial employment are forecast for the Route 128 Band, along with appreciable gains in the Western and South Shore areas. In addition, a reversal of the 1947-1959 loss is projected for the Merrimack Valley area. On the other hand, the level of industrial jobs is expected to remain stable in the Core itself as well as in the Lynn Salem area.

The GBESC report suggested that less reliance be placed on the sub-area projections presented in Table 15 than on those for the region as a whole, since added uncertainty has been injected in determining how the various sub-areas will share in regional employment.

Moreover, in assessing the reliability of any of the employment projections in the GBESC report it should be remembered that they were prepared as a basis for forecasting future land needs and not as independent projections of employment. The projections may therefore err in the direction of optimism in order to estimate the region's maximum need for new industrial land.

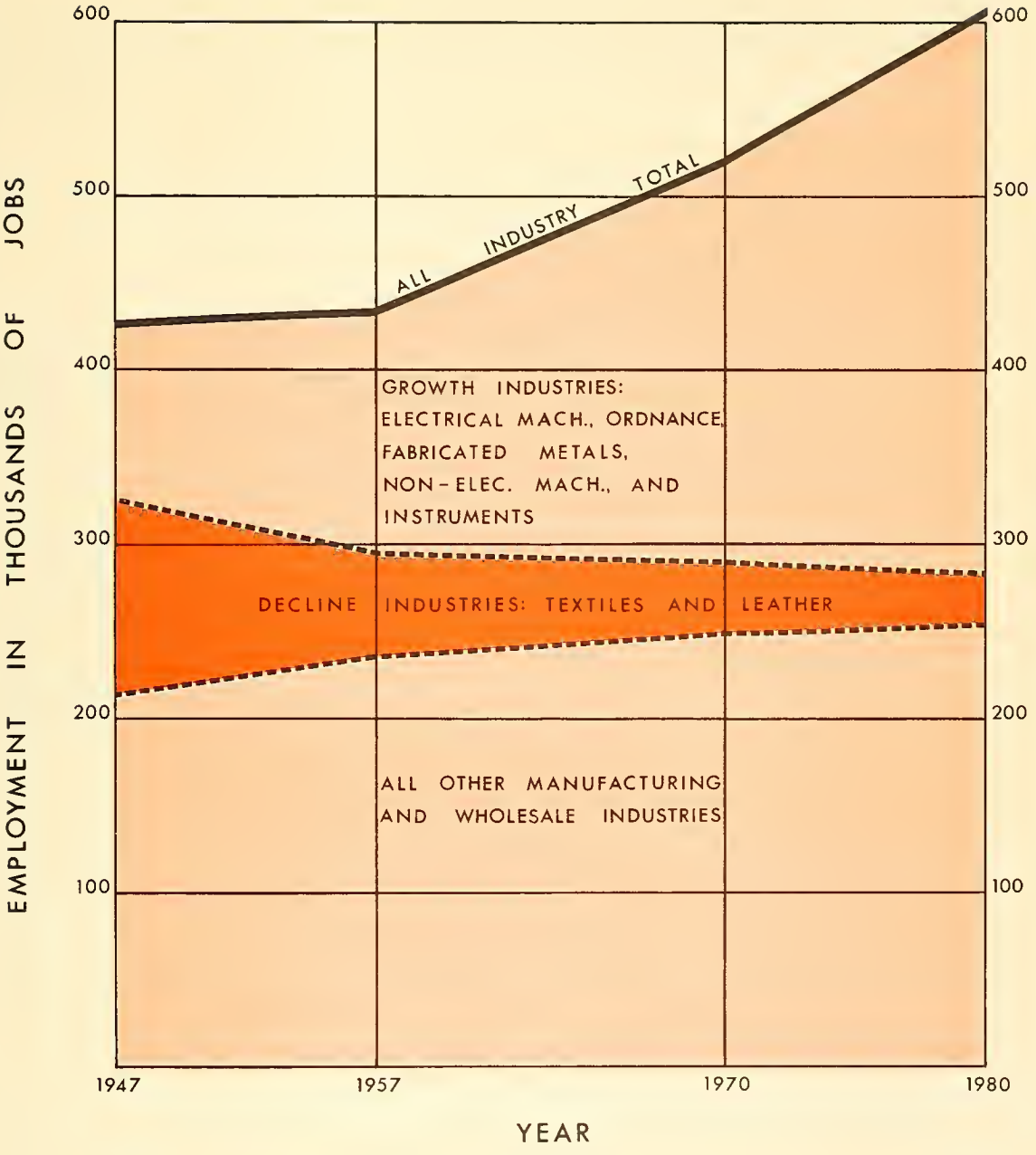
Employment trends for Non-Manufacturing Industries

Employment in non-manufacturing industries has not received the detailed analysis that is available for manufacturing. However, in order to present a coherent framework for expected regional employment, non-manufacturing employment must be considered.

Three non-manufacturing growth categories are projected to increase more rapidly than total employment: finance, services, and government. Substantial growth in these categories is occurring throughout the nation and is concentrated in major metropolitan areas.

Trends toward continued increases in government employment are occurring throughout the nation and the Boston region is expected to share in this trend. Regional employment in government is likely to maintain its present share (about two per cent) of nationwide government employment.

A high rate of projected increase in finance employment is anticipated, closely related to the fact that participation in investment and insurance programs is increasing among the large middle income segment of the population and is increasingly reaching lower economic strata. Some experts



MANUFACTURING EMPLOYMENT IN GREATER BOSTON PROJECTED TO 1980

SOURCE: GBSC, INDUSTRIAL LAND NEEDS THROUGH 1980

TABLE 15

MANUFACTURING EMPLOYMENT IN MAJOR SUB-AREAS OF THE GREATER BOSTON AREA,* 1947-1957 AND PROJECTIONS FOR 1970 AND 1980.

	Employment (thousands)				Per Cent of Total Greater Boston Area			
	1947	1957	1970	1980	1947	1957	1970	1980
Boston Metropolitan Area								
Core	218	205	192	201	50.9%	47.0%	36.9%	33.1%
Route 128 Band	29	46	89	118	6.8	10.6	17.1	19.4
Lynn-Salem	51	49	49	56	11.9	11.2	9.4	9.2
South Shore	13	23	33	38	3.0	5.3	6.3	6.3
Southeast Coastal	3	3	5	10	0.7	0.7	1.0	1.6
Lawrence-Lowell Metropolitan Area								
Merrimack Valley	61	53	77	88	14.2	12.2	14.8	14.5
Brockton-Taunton	30	28	31	38	7.0	6.4	6.0	6.3
Outlying Areas								
Northeast Coastal	5	5	7	9	1.2	1.1	1.3	1.5
Western	19	25	38	49	4.4	5.7	7.3	8.1
TOTAL AREA	428	436	520	607	100.0	100.0	100.0	100.0

* See notes to Table 6. Where percentages do not sum to 100.0% errors are due to rounding.

Source: GBESC, Industrial Land Needs Through 1980, Land Use Report No. 2, prepared by The Planning Services Group, (May, 1962).

suggest that automation may decelerate or reverse the trend toward increased employment in offices including financial institutions. Banks and insurance companies have devoted a good deal of attention to the use of complex computer equipment in recent years, but to date, the chief results have been a speedier flow of information and paperwork rather than a diminution of personnel. Opinions concerning the future are divided between those who believe that the end product of the coming decade of automation will decrease jobs available for finance and other office employees and those who feel that a combination of rising business volume and a desire for increasingly complex and faster communications will continue to expand employment in this category.[1]

A diversified and complex economy creates major demands for varied and specialized services. Projections of continued substantial employment growth in the service occupations rests on the fact that they are labor intensive: Large numbers of persons are required to carry on the various functions since many service activities are not susceptible to automation, but require face-to-face contact. Growth in the services has primarily been due to expansion of business services such as advertising, credit and collection agencies, and research and consulting agencies in which employment levels do not appear to be especially vulnerable to technological advances.

1. For a discussion of automation see: The Annals of the American Academy of Political and Social Science, "Automation", (March, 1962).

Only one employment category is expected to decline in numbers: Transportation, communication, and public utilities, a category which is extremely susceptible to automation, is expected to decline by about two per cent below the 1960 level by 1970. The future outlook for transportation technology and consumer markets seems to point to employment trends through the 1970's not significantly different from those of the past decade. Automation and the near-cessation of commuter rail service will probably drive railroad and public transportation employment levels down even further, but increases in jobs in trucking and in the growing communications and utilities industries are likely to counterbalance these losses.

Employment in retail and wholesale trade and construction activities is projected to increase only moderately, since growth in these occupations is closely tied to population and income trends. The region's expanding, considerably more affluent population will create demands for larger numbers of homes, schools, and other community facilities, thereby affecting levels of construction and trade employment. If regional population experiences more than the anticipated ten per cent growth in the next ten years, employment in construction and trade may well grow even faster. However, trends toward greater automation of retail and construction activities may weaken the stimulus generated by population gains and rising incomes.

Construction is an activity subject to a considerable amount of automation and rationalization. The use of large scale machinery and production line techniques has advanced fairly rapidly in recent years, showing increases in employment. However, due to the nature of a large part of the construction industry which operates on a seasonal, custom basis

it has not been easy to apply assembly line procedures in the field or factory. In addition there are powerful institutional forces slowing the full scale application of automation in this field, including opposition from contractors, and from community and labor interests. For these reasons, employment in construction is likely to continue to increase in the nation and region, though probably at a somewhat slower pace than increases in population.

The Future of the Core

Despite trends toward suburbanization the Boston region is still characterised by a very compact pattern of development with most of the population and economic activity concentrated within a ten mile radius of Boston. However, strong centrifugal tendencies i n the recent past, including the suburbanization of housing and economic activities, have weakened this pattern. If these recent trends continue, the Core which contained almost half the region's population in 1950 will decline to a third of the total by 1980, a trend which would have marked effects on the economy and other aspects of the development of the region. However, if there is sharp growth in popularity of in-town apartments, the Core's share of the region's future population may be significantly larger than if the trend toward single family dwellings in suburban locations continues to dominate the regional scene.

In addition to its attractiveness as a residential area, the future of the Core depends in large measure on its attractiveness as a place to work and shop. Centrifugal tendencies in retailing are indicated by the decrease in the proportion of regional retail sales in the Boston CBD, whose share fell from 15% to only nine per cent of the regional sales total between 1948 and 1958.

A similar but less drastic decline was noted for the city of Boston which decreased from 37% of the region's 1948 total sales to 31% in 1958. If the recent trend (1954-1958) continues, by 1970 Boston may account for only a fifth of the region's retail sales with only a minor fraction of the total in the Boston CBD.

Between 1947 and 1957 the Boston Central Business District experienced sharper employment losses in manufacturing (down 25%) and wholesaling (down 19%). There were some rays of hope, however. During the same decade, finance employment increased by 14% and services employment by 11%.[1] Numerically, total job gains in downtown growth sectors amounted to 9,000 of which over 5,000 were derived from finance and insurance.

Employment change in the CBD is directly related to transportation patterns. The decline in retailing is largely the result of declines in downtown employees and shoppers entering the CBD. The decline in manufacturing, wholesale and retail activity, accompanied by an increase in finance and service employment, presages an increase in the volume of long-range commuter trips from the suburbs to the Core as the ranks of white collar executive and supervisory personnel continue to grow rapidly; however, total trips to the CBD may decline as the CBD working population diminishes. The growing movement of white collar workers to the CBD will be accompanied by a growing reverse flow of manufacturing employees travelling between Core homes and suburban factories.

Employment trends in the Core presented in Table 16 have generally paralleled population trends. In the years since 1947, Core population declined at an annual rate of one per cent annually while employment decreased at the

1. GBESC, A Report on Downtown Boston, (May, 1959).

rate of about one-half of one per cent per year. The decline in the Core's share of total covered jobs was concentrated in the 11 years 1947-1958. Between 1947 and 1958 the Core lost almost 40,000 jobs. The situation changed considerably between 1958 and 1960, however, when Core employment increased by about 3,000.

Core area losses have been concentrated in the City of Boston. In 1947, Boston contained 2.5 times as many covered jobs as the remainder of the Core. By 1960 the ratio had declined to a position of comparative equality with the remainder of the Core. Expressed as a proportion of total regional employment, Boston's share diminished sharply between 1947 and 1958 but levelled off between 1958 and 1960. In both periods Boston's major losses were caused by decreases in manufacturing jobs; the city's decline in manufacturing jobs between 1947 and 1960 was accountable for two-thirds of its job losses.

The region's center of financial, insurance and business services activity, Boston added almost 14,000 new jobs i n these two categories over the 13 years 1947-1960; this sizable gain was sufficient, however, to compensate only for about a quarter of job losses in other categories including a 28,000 decline in manufacturing jobs, a 19,000 loss in the trade category and a 5,000 loss in construction employment. By 1960 finance and services provided more jobs in Boston than did manufacturing industry.

The Core area minus Boston experienced employment trends which differed radically from those of the central city. Gains and losses in the remainder of the Core were in balance in the 1947-1958 period and there was a minor overall gain in ¢otal covered jobs between 1958 and 1960. The primary

Table 16
EMPLOYMENT AND EMPLOYMENT CHANGES BY MAJOR CATEGORIES IN THE CORE COMMUNITIES OF THE BOSTON METROPOLITAN REGION, 1947-1958 AND 1958-1960.*

	Employment (thousands) 1960	Numerical Change (thousands) 1947-1958	1958-1960	Per Cent Change 1947-1958	1958-1960
Core					
Total Employment	537.3	-37.9	+3.8	-6.6%	+0.7%
Construction	31.1	- 2.0	-1.8	- 3.1	-5.6
Manufacturing	158.5	-32.2	+ .1	-17.3	+0.1
Transportation	49.8	+ 2.2	- .8	+ 4.7	-1.6
Trade	163.6	-18.5	- .3	-10.0	-0.2
Finance	61.8	+ 9.5	+1.4	+18.8	+2.3
Service	72.5	+ 5.9	+5.3	+ 9.5	+7.9
Core Minus Boston					
Total Employment	165.8	+ .03	+6.7	+ 0.04	+4.2
Construction	13.1	+ 1.6	- .37	+14.7	-2.8
Manufacturing	71.3	- 6.3	+ 2.4	- 8.4	+3.5
Transportation	11.5	- .64	+ .37	- 5.5	+3.3
Trade	42.6	- 1.5	+1.7	- 3.6	+4.1
Finance	8.3	+ 3.2	+ .62	+69.2	+8.0
Service	19.0	+ 2.7	+2.1	+19.7	+12.1
Boston					
Total Employment	371.5	-37.9	-3.0	- 9.3	-0.8
Construction	18.0	- 3.6	-1.5	-17.1	-7.5
Manufacturing	87.2	-25.9	-2.3	-23.3	-2.6
Transportation	38.3	+ 2.9	-1.2	+ 8.1	-3.1
Trade	120.9	-17.0	-2.0	-11.9	-1.6
Finance	53.5	+ 6.3	+ .8	+13.7	+1.4
Service	53.5	+ 3.3	+3.2	+ 6.7	+6.4

* In 1958 there was a change in SIC classification. The 1947-1958 changes are based on the old classification, the 1958-1960 changes on the new classification. In 1947 both Boston and Brookline were subtracted from the total. Core communities include: Boston, Brookline, Medford, Somerville, Chelsea, Winthrop, Revere, Malden, Melrose, Everett, Cambridge, Wakefield, Arlington, Belmont, Newton, Watertown.

Source: Massachusetts Division of Employment Security, data for employment covered by employment security program.

reason for the recent improvement was a turnaround in the manufacturing trend. Moreover, the Core-minus-Boston area gained about half as many jobs over the 13 years 1947-1960 as did the city in the finance and service growth categories, indicating that downtown Boston is no longer the sole geographic location for these activities.

Job gains were concentrated in a narrow geographic compass. Growth was centered in Newton, a town which demonstrates many of the characteristics of a Route 128 community despite its common border with Boston and its inclusion in the MTA district. Over the years 1947-1960 Newton gained 11,000 jobs, 5,600 of them in manufacturing. Without Newton to buoy the economy, the Core-minus-Boston area would have sustained a minor loss in non-manufacturing and a sizable loss i n manufacturing during the period 1947-1960. Employment trends in some of the municipalities in the Core area show a closer resemblance to those of Boston, particularly with respect to manufacturing, than they do to a growth community like Newton.

On the basis of recent trends, it appears likely that the Core will continue to be the region's major employment center. For example, a continuation of 1958-1960 employment trends through 1970 would still leave the Core with well over a third of the region's total employment with the City of Boston supplying between a fifth and a quarter of regional jobs. This implies that Boston and the Core will remain a job surplus area recruiting employees from the suburbs since their respective shares of regional population are expected to be substantially smaller than their proportion of regional jobs. This, there will continue to be a strong need for an effective radial transportation system to carry workers from the suburbs to Boston and the remainder of the Core, as well as a large potential market for mass transportation for the journey-to-work of Core residents.

Complaints about the levels of taxation have been a feature of organized societies throughout most of history. Within Massachusetts, attacks on the fiscal system have mounted in volume in recent years partly as a by-product of political partisanship but even more as a consequence of justified concern over an obsolete, inequitable system badly in need of major reforms. Much of the attention has focused on local property taxes because, as stated in a recent report by the Greater Boston Economic Study Committee:

> "Property taxes per capita in this state are higher than they are in any other state in the nation. They are uneven in the burdens they impose on the cities and towns of the Commonwealth ... (They) ... pose a threat to the steady flow of new investment into the state.... The crux of the problem is that local governments in Massachusetts bear a much greater responsibility for providing government service and for spending than do local governments in most other states. As property taxes are still the main source of local government revenue, expenditure increases in Massachusetts therefore generate disproportionately large increases in the burden of this tax."[1]

The most serious problems engendered by the pattern of state-local fiscal relations in Massachusetts are concentrated in some built-up communities and, to a lesser extent, in a number of rapidly expanding suburban towns. Since these high tax communities contain a minority of the state's population, it has been found difficult to marshal wide support for tax reform. All told, there appear to be only 11 high tax communities out of 144 communities in the Boston Metropolitan Region. These 11 communities contain 1.1 million people, or about a third of the region's population. The tax problems faced by different regional communities can

1. Financing Local Government in the 1960's, GBESC, May, 1961.

be summarized as follows.[1]

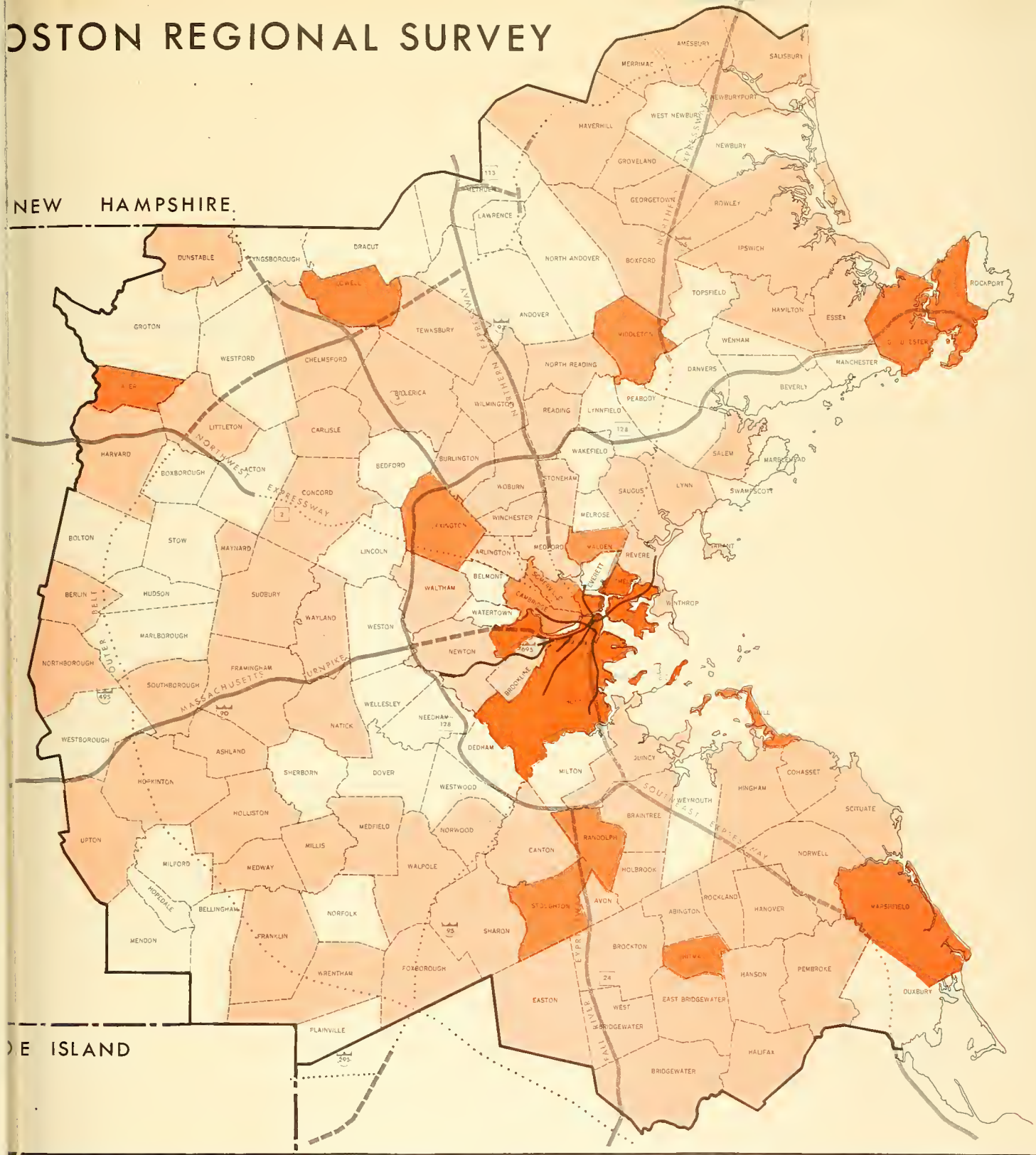
(1) Central Cities. Boston and Chelsea have far and away the highest levels of real tax rates in the region.[2] Three other Core communities, Cambridge, Somerville and Malden, also have extremely high tax rates. The problem in each case is a tax base which has either been shrinking or else not expanding rapidly enough to meet growing needs. The most widely discussed problems are those of the City of Boston where total assessed valuation declined by over $500 million or 25% between its 1930 peak and 1959.

In addition to the high tax Core communities some urban communities in outlying areas are also faced with serious tax problems. In Lowell, Ayer and Gloucester, a declining tax base has proven inadequate to meet increased municipal needs without imposition of high property taxes. Even in the region's high tax communities, however, it must be recognized that many property owners are not heavily taxed. Some high value Core area housing, for example, and particularly older dwellings in established neighborhoods, is assessed at an extremely modest percentage of true

1. The discussion of tax rates in this section is based on equalized, rather than nominal, tax rates. Because the requirement that all communities assess at 100% of fair market value is more honored in the breach than the observance, published tax rates bear little resemblance to reality. Figure 12 presents data on local tax rates on an equalized basis; however, it should be recognized that the data used to prepare the figure is subject to doubt, and ignores another major problem of local tax policy: in many communities, assessment ratios vary among different types of property and even among the same types of property within a single community.

2. Compiled by Cabot, Cabot & Forbes C o. from Massachusetts Taxpayer's Federation data, Boston Sunday Herald, February 4, 1962.

OSTON REGIONAL SURVEY



EQUALIZED TAX RATES, 1961

- UNDER $26.00/$1000 OF VALUATION
- $26.00 - $37.00
- $37.00 - $47.00
- OVER $47.00

SOURCE: MASS. TAXPAYERS' FEDERATION

GENERAL INFORMATION

- EXPRESSWAYS
 - UNDER CONSTRUCTION
 - PROPOSED
- MAJOR HIGHWAYS
- SECONDARY HIGHWAYS
- MAJOR RAILROADS
- SECONDARY RAILROADS
- RAPID TRANSIT LINES

NORTH

2560 ACRES = 1 SQUARE MILES

0 5 10 MILES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

RE... FOR THE MASS TRANSPORTATION COMMISSION

...HE PLANNING SERVICES GROUP, CONSULTANTS

THE PREPARATION OF THIS MAP HAS BEEN FINANCED IN PART THROUGH AN URBAN PLANNING ASSISTANCE GRANT FROM THE U.S. HOUSING AND HOME FINANCE AGENCY UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

value. Owners of such dwellings may actually pay less in taxes than owners of new suburban dwellings. In contrast, downtown commercial property frequently is taxed at a high percentage of its true value.

(2) Fast Growing Suburbs. In some of the region's rapidly expanding suburbs an influx of large numbers of low income families has not been counterbalanced by a proportionate expansion of property which produces revenue surpluses. This is true of such communities as Hull where conversion of seasonal housing to year-round use has turned revenue-surplus producing property into tax deficit units and in such towns as Randolph and Whitman where construction of large amounts of low cost housing has not been accompanied by sizable inputs of either higher cost housing or by substantial industrial or commercial development.

Three types of communities in the region, comprising over 90% of the municipalities and two thirds of the population, enjoy low-to-moderate property taxes. About 500,000 people, roughly one seventh of the region's total population, reside in communities with extremely low tax rates.

(3) Stable Core Communities. A number of built-up Core communities have evolved a stable relationship between the tax needs of a slow growing population, a substantial residential, and in some cases, industrial and commercial, tax base, and municipal expenditures. Such communities include Belmont, Watertown, and Everett in the low tax rate category, and Brookline, Newton, Arlington, Medford, and Winchester in the moderately low tax bracket. A number of urbanized communities outside the Core also fall into this stable classification including Brockton, Lawrence, Haverhill, Framingham, Quincy, Weymouth, Braintree,

Revere, Lynn, Salem, and Saugus. Tax rates have been rising in all of these communities, but the pace of increase has been moderate and the total tax burden is still on the low side.

(4) Low Tax Suburban Communities. A number of communities which contain large amounts of open land, some of which have experienced substantial increases in population in recent years, still enjoy low tax rates. Communities in this category include Duxbury and Rockport where considerable recreation property adds to the tax base. Lincoln, Weston and Sherborn, where large lot zoning tends to limit residential development to more expensive housing while at the same time it eliminates the necessity for expensive municipal sewerage systems, are prototypes for a number of towns in this classification. There are also a number of outlying semi-rural communities such as Groton and Boxborough in which taxes are low because they have yet to experience the full impact of suburbanization.

(5) Balanced Suburbs. The last group consists of suburban communities which have successfully balanced residential expansion with major increases in their industrial and commercial tax base. Communities of this type include suburbs near Route 128 which have provided sites for industrial parks such as Needham, Dedham, Bedford, and Westwood. Other communities in this category include Andover and North Andover in the Lawrence area, and Lynnfield and Peabody (site of the North Shore Shopping Center) near Boston.

Three additional observations are in order concerning property taxes in the region. The first concerns the rate of increase. The GBESC study of 65 Greater Boston area communities concluded that the rate of

increase in the period 1958 - 1970 property taxes will be somewhat less than in the 1949 - 1958 period assuming that the present pattern of state-local fiscal tax relationships remained unchanged through 1970. Moreover, as Figure 13 indicates, property taxes will probably continue to rise faster in the suburbs than in the City of Boston.

A second point to be considered is the disparities between published tax rates, actual rates, and the differential tax burden imposed on property within communities. Not only is commercial and industrial property more heavily taxed than residential property of the same value but there are frequently substantial differences between taxes imposed on new housing as compared to older residences, as well as between houses in different neighborhoods. Reassessment, one method of uncovering overlooked tax valuation and reducing tax discrimination, has been adopted in some communities. However, a thorough reassessment program is expensive, and frequently it is opposed by taxpayers who fear that it would result in higher taxes on their property as well as by those who believe that any benefit which might be derived from a community reassessment program would not justify its cost.

Although the figures available for comparisons are both crude and tentative, they are sufficiently accurate to draw two conclusions:

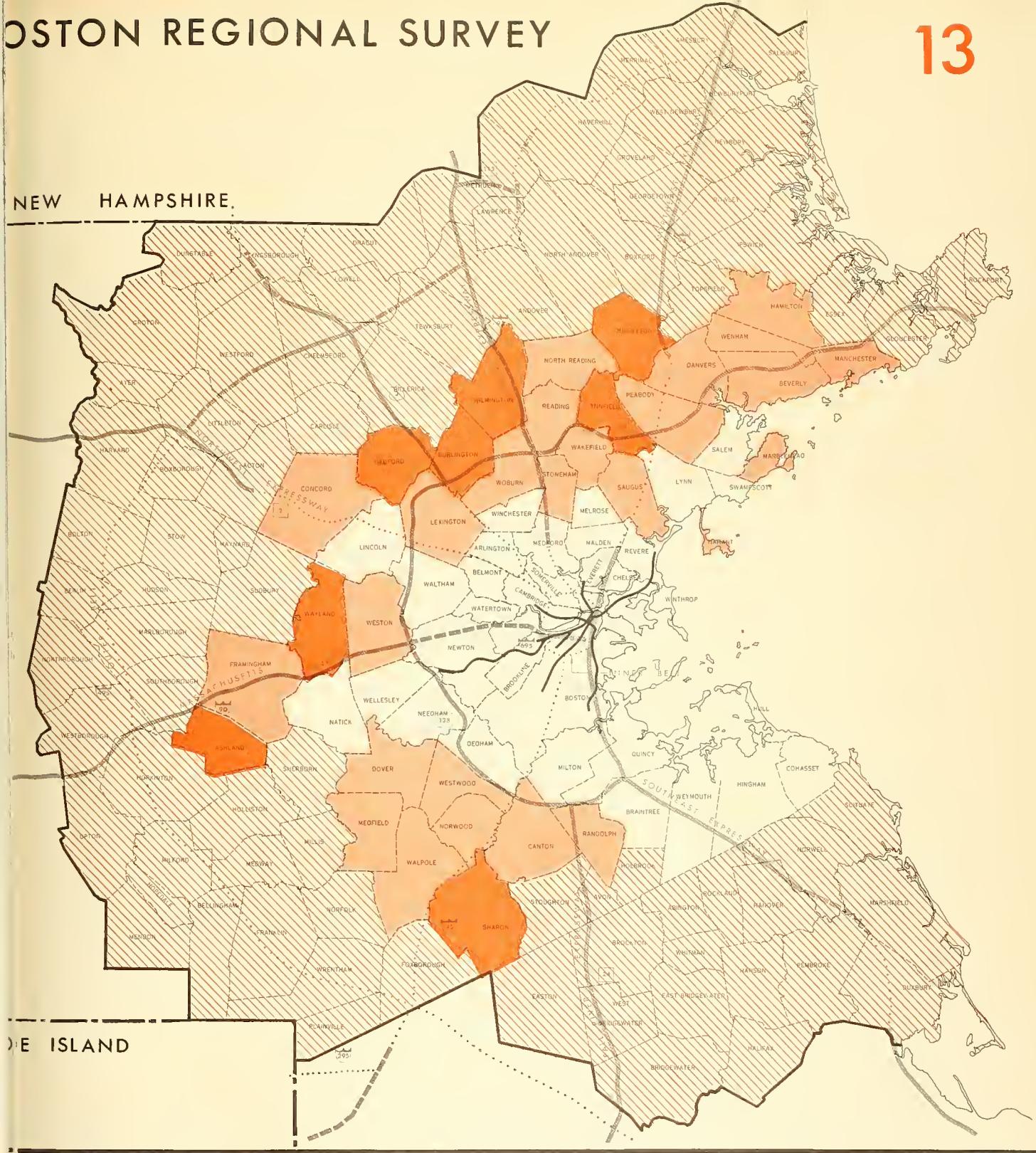
(1) Local property taxes are two or three times as burdensome for homeowners and renters in Boston and other high tax communities as they are in many suburbs, and

(2) Property taxes are not a serious problem in most of the region's communities.

It seems safe to say that part of the reason for the failure to enact a thorough going reform of the state-local tax structure in Massachusetts can be found in the fact that most taxpayers are not afflicted by local property taxes. As in the case of the M. T. A. deficit, a relatively small number of Core communities are the most troubled by this problem, while most suburbs and outlying communities have not yet been driven to demands for tax reform.

OSTON REGIONAL SURVEY

13



PROJECTED CHANGE IN PROPERTY TAXES, 1958 – 1970

- OVER 150% INCREASE
- 75 – 149% INCREASE
- 0 – 74% INCREASE

CHANGE IN TOTAL PROPERTY TAX LEVY

- NO INFORMATION

SOURCE: GBESC, FINANCING LOCAL GOVERNMENT IN THE 1960'S

FOR THE MASS TRANSPORTATION COMMISSION

THE PLANNING SERVICES GROUP, CONSULTANTS

GENERAL INFORMATION

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 - UNDER CONSTRUCTION
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- RAPID TRANSIT LINES

SYMBOL APPEARS ONLY WHEN LISTED ITEM IS SHOWN ON MAP

NORTH

1 | 2560 ACRES

SQUARE MILES

0 5 10 MILES

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The opening section of this chapter, which concerns the historical development of the Boston region, was based in large part on the following sources:

1. Handlin, Oscar, Boston's Immigrants, (The Belknap Press of Harvard University, Cambridge, Massachusetts, 1959).
2. Handlin, Oscar and Handlin, Mary Flug, Commonwealth, A Study of the Role of Government In the American Economy: Massachusetts 1774-1861, (New York University Press, New York 1947).
3. Alderfer, E. B., and Michl, H. E., The Economics of American Industry, (McGraw Hill, New York, 1957).
4. French, George, New England, What It Is and What It Should Be, (Boston Chamber of Commerce, 1911).

Economic classification of cities is given special attention in articles by Howard J. Nelson, "A Service Classification of American Cities" and Chauncy D. Harris, "Functional Classification of Cities in the United States," in Readings in Urban Geography, edited by Harold M. Mayer and Clyde F. Kohn, (The University of Chicago Press, Chicago, 1959); and in Gunnar Alexandersson, The Industrial Structure of American Cities, (The University of Nebraska Press, Lincoln, Nebraska, 1956) and Otis Dudley Duncan et. al., Metropolis and Region, (The Johns Hopkins Press, Baltimore, 1960).

Publications of various bureaus of the federal government provided a major source of data. Employment and Earnings, a monthly publication (with an annual summary) of the United States Department of Labor, Bureau of Labor Statistics provided most of the employment data utilized here. These data are based on sample payrolls, submitted by employers, which are used to calculate employment for nonfarm wage and salary workers. The BLS

estimates that about 75% of all employment is covered by this data. Many of the non-covered categories are unimportant factors in most urban areas, including workers in agriculture and members of the armed forces. However, special allowance must be made for other categories including self-employment and domestic service which provide about an eighth of total jobs. Each publication includes a section on coverage and concepts.

Data concerning sales volumes in the various employment categories are published by the United States Bureau of the Census. Data on retail trade were taken from the Census of Business, Vol. II, which includes sales volumes for cities, towns, and metropolitan areas. Certain adjustments of the data necessary due to classification and metropolitan area changes are noted in the text. Data on wholesale trade are found in Vol. IV of the Census of Business, while Vol. VI deals with the number of establishments and receipts of the selected services.

The U.S. Bureau of the Census publishes in the Census of Business a volume entitled Central Business District Statistics, which presents the number and type of retail establishments and their sales volumes in selected urban centers. This volume also deals with selected service establishments such as hotels.

The U.S. Census of Manufactures presents data for selected cities, towns and metropolitan areas concerning employment, payrolls, number of establishments and value added in manufacturing.

The Statistical Abstract of the United States, published by the Bureau of the Census which presents summary data compiled by the Department of Commerce was utilized mainly as a reference for total United States data.

Another major source of data, cited throughout the report is the Greater Boston Economic Study Committee which has published the following reports related to regional economic factors.

1. GBESC, Industrial Land Needs Through 1980, Land Use Report No. 2, prepared by The Planning Services Group, (May, 1962).

2. Burtt, Everett, J., The Labor Force of Greater Boston, Economic Base Report No. 1, prepared for the GBESC, (June, 1959).

3. GBESC, A Report on Downtown Boston, (May, 1959).

4. GBESC, Financing Local Government in the 1960's, May, 1961).

Other sources of data included:

1. Arthur D. Little, Inc., Preliminary Research For the Redevelopment of Boston's Retail District, a report to the Boston City Planning Board, (December 3, 1957). This reference evaluates sales trends in downtown Boston, considers the various threats to downtown retail vitality, such as suburban shopping centers, and evaluates the future possibilities for downtown retailing.

2. Estle, Edwin F., New England's Personal Income Projected to 1970, 1970 Projections No. 12, prepared for the Federal Reserve Bank of Boston, (December, 1959): Presents projections of personal income to 1970 in various categories, such as wage and salary groups, property income, etc.

3. Berman, B.R., Chintz, B., and Hoover, E.M., Projection of a Metropolis, (Harvard University Press, Cambridge, Massachusetts, 1960). Develops employment projections by two-digit categories for the nation and New York area.

4. Perloff, Harvey S., et. al., , Regions, Resources and Economic Growth, (Johns Hopkins Press, Baltimore, 1960). Discussion of trends in regional development.

5. Smith, Howard G., New England's Personal Consumption Expenditures in 1970, 1970 Projection No. 8, prepared for the Federal Reserve Bank of Boston, (December, 1959).

6. Shen, T.Y., New England Manufacturing Industries in 1970, 1970 Projection No. 1, prepared for the Federal Reserve Bank of Boston, (June, 1959). Presents two-digit employment projections for manufacturing industries in New England.

7. Business Week, "Boom Moves to the Hub", (June 9, 1962). Discusses factors in Boston's postwar economic resurgence and suggests that the Route 128 growth pattern may be moving toward Boston.

8. Killingsworth, Charles C., editor, "Automation," The Annals of the American Academy of Political and Social Science, Vol. 340, (March, 1962). Discussion of the social and economic impact of automation.

9. The Federal Reserve Bank of Boston, Commercial Banking in New England 1784-1958, (Annual Report for 1959). Traces the history of New England commercial banking and its role in the region's economic development.

10. The Federal Reserve Bank of Boston, A History of Investment Banking in New England (Annual Report for 1960). Contains much useful material on investment banking in Boston.

BOSTON REGIONAL SURVEY

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Errata Sheet

p. 38	Line 6, nearly half should read "over two fifths"
p. 53	Lines 12 and 13,SMSA should read SMA
p. 62	Line 29, data refers to Table 13
p. 64	Title, SMSA should read SMA
p. 82	Line 5, 3,000 should read 3,800





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